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PHYSICAL TRAINING
IN THE ARMY
1958

Pamphlet No. 6

ALLIED SUBJECTS
(GROUP B)

Part I: Organization of Recreational Training

Part II: Athletics

Part III: Association Football

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Physical Training in the Army

Pamphlet No. 6

By Command of the Army Council

E.W. Playfair

THE WAR OFFICE
1958

LONDON
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Physical Training in the Army

PAMPHLET NO. 6

ALLIED SUBJECTS (GROUP 'B')

PART I: ORGANIZATION OF RECREATIONAL TRAINING

CHAPTER 1

General Considerations

Section 1 : APPLICATION

General

1. Before studying this pamphlet and pamphlets Nos. 5 and 7, instructors must ensure that they have read and understood the principles of physical training outlined in pamphlet No. 1, as these principles of instruction apply equally to recreational training. In particular, attention is drawn to sections 5 and 6 of pamphlet No. 1 which deal with the value, importance and place of games and sports in the Army.

2. This chapter is intended as a general guide to their organization and application. Details of the organization of recreational training and of certain physical training sponsored games and sports are given in this pamphlet and in pamphlets 5 and 7 as follows:

Pamphlet No. 5—Part I—Swimming
Part II—Unarmed combat
Part III—Wrestling
Part IV—Boxing
Pamphlet No. 7—Part I—Basket ball
Part II—Gymnastics
Part III—Fencing

Recreation

3. The term 'recreation' covers a very wide field of activity and its scope ranges from reading a book to mountaineering. The aim of this part of the pamphlet is to give pointers to the application of physical recreation, so that all members of a unit, and especially those with little aptitude for games, will be given healthy, purposeful and enjoyable exercise, and learn skills which will encourage self-effort and the will to become more proficient.

Responsibility

4. The following summary, which shows the responsibility for recreational training, is advisory and the commanding officers may have to make adjustments to suit local conditions.

(*a*) *Boys recreational training instructional periods.*

(*b*) *Recruits recreational training instructional periods.*
(WO P and RT Syllabus) Instruction carried out by the physical training staff.
Subjects: Physical training sponsored games and sports.

(*c*) *Recruits and boys recreational training afternoons.* Supervision and instruction carried out by unit officers and NCOs and physical training staff.
Subjects: Army sponsored games and sports.

(*d*) *Trained soldier's recreational training.*
Supervision and instruction carried out by all unit officers and NCOs, assisted by available physical training staff.
Subjects: Army sponsored games and sports.

Training aspects

5. The training principle that all should participate must be strictly adhered to. It is usually the poorest performers who need the most exercise because good performers generally look after themselves. The non-players must receive the maximum encouragement and assistance, as the effect of even slight progress and achievement will encourage greater effort. It is easy and pleasant for the instructor, or officers-in-charge, to bathe in the reflected glory of a cup-winning team but the true judgement of the games ability of a unit should be made on the all-round standard of all the men of that unit.

6. Training must allow for the varying abilities of the men who should be classified in the following manner for training in any particular sport:

(*a*) *Non-player.* Is he competent at other games?
Is he physically backward or handicapped in any way?
Has he any ' strong ' points?
Would he be suitable as an official if not as a player?
Does he dislike the particular game in question?

(*b*) *Competent player.* Can he be used to coach others?
Can he play other games?
Is he a good official?
Does he know the rules well?

Programme

7. To enable the maximum use of training facilities, (e.g. grounds, equipment, kit, instructors and coaches) recreational training afternoons should be staggered throughout the week, but in every case, classes or groups must be limited to manageable proportions to ensure the proper application of training principles.

Outdoor and indoor training

8. Recreational training can be carried out indoors as well as outdoors and at all times instructors must have an indoor programme planned and prepared for use in the event of bad weather making outdoor training impossible. This indoor training could take the form of 'potted sports' or a minor games competition which are described in a later section.

9. Great attention must be paid to the preparation of playing pitches, equipment, kit, dress, etc, for men will immediately lose interest if they are dressed in dirty playing kit or old boots, or if the playing pitch is not marked out. Where a gymnasium is permanently available, it is useful to have it suitably marked out for such games as basket ball, badminton, fencing, etc, according to its size. Minor games areas are then easily marked out in chalk using the permanent lines as a framework.

10. It is the duty of each unit to train as many officials and coaches as possible, and this can be done in one or more of the following ways:

(*a*) *Regimental cadres*

(i) Under APTC instructor for physical training sponsored games.

(ii) Under unit specialist officers or NCOs; under civilian voluntary coaches; under one of the national coaching schemes.

(*b*) *Command courses,* as notified in command orders.

(*c*) *Courses at the Army School of Physical Training.* For unit officers, NCOs and men, who have special aptitude in any physical training sponsored sports. Details are given in the War Office syllabus of courses held at the Army School of Physical Training, Aldershot.

(*d*) *Civilian courses.* Run by the Central Council of Physical Recreation; fees are very moderate and details of courses may be had from the head office of the CCPR in London.

Section 2: METHOD OF CONDUCTING RECREATIONAL TRAINING

11. It is beyond the scope of this pamphlet to deal with every possible method of applying recreational training, and the following examples and suggestions are given as a lead only. With sound planning and preparation, training can be of great value, but an ill-prepared lesson is useless. Many officers and non-commissioned officers often think that recreational training consists only of sending a number of men out to play or attempt to play a game. This view is entirely wrong and good recreational training requires very careful planning.

12. In the past, attempts have been made to introduce games tables. This met with a mixed reception from instructors. It is now felt that training conditions, standards of individual ability, local grounds, kit

available, and unit requirements vary so greatly throughout the Army, that instructors on the spot must plan their own lessons to suit their individual needs.

The instructor must adhere to the principles of training as outlined in pamphlet No. 1 and to instructions for training for specific sports as outlined in the relevant chapters of this pamphlet which follow and of pamphlet No. 6. Normally he should conduct his lessons in accordance with the following lesson plan:

Lesson plan

Part I—Brief revision (rules, tactics, skills, etc).

Part II—Teach new skills followed by practice and coaching.

Part III—Free practice of all previously taught skills, or a game with coaching.

(Parts II and III could also be used to illustrate tactics, rules, etc).

13. **Example: Major game 'A'**

Lesson 1—Major game.

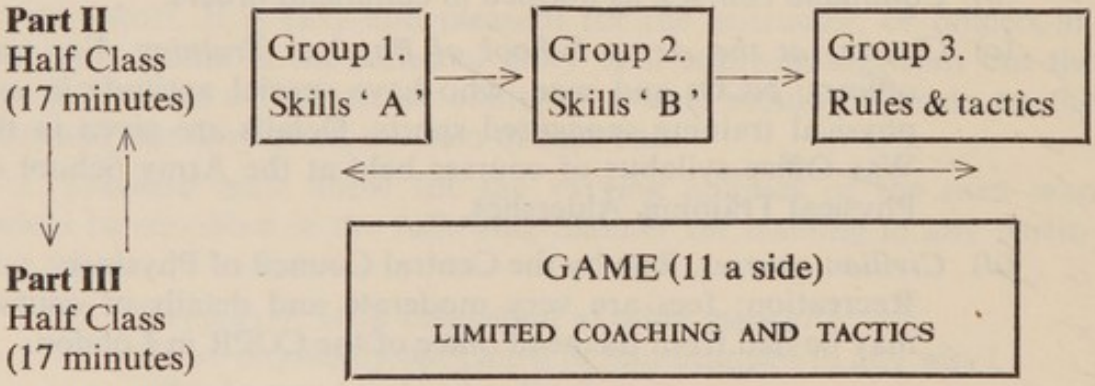
Duration—40 minutes upwards.

Class—50.

Assistants and coaches—Four.

Groups—According to ability.

Part I—Revision and talk (six minutes).



Notes:

(i) Part II—Groups change round.

(ii) Part III to include men under training as officials and coaches.

(iii) The coach's whistle should be of a different tone to the referee's whistle.

(iv) The coach should have a high seat (e.g. about 10 ft. from ground), and an efficient megaphone.

(v) Players should wear some means of position identification for tactical training, e.g. numbered or lettered shirts, or coloured slip-over bibs denoting playing position. This would enable the coach and players to follow the tactical positions more easily.

14. **Example of instructional periods emphasizing skills**

Lesson—Major game skills.

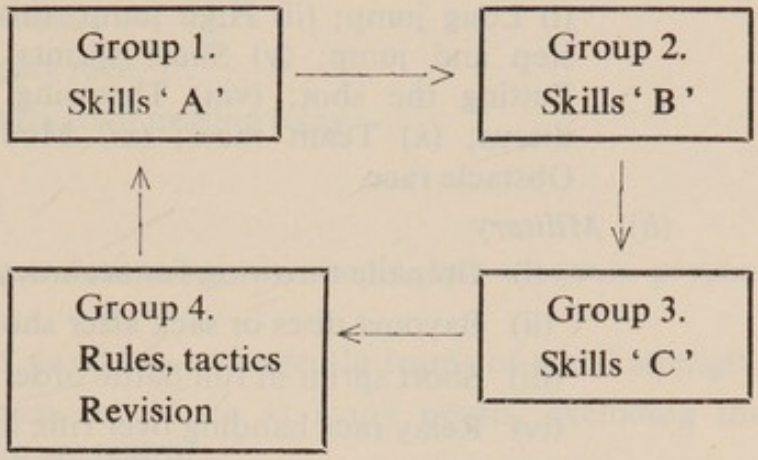
Duration—40 minutes.

Number of men—50 (grouped according to ability—four groups).

Assistants and coaches—four.

Part I—Brief revision—six minutes.

Part II
(seven minutes each group)



Part III—All groups, free practice of skills in which men are backward. Six minutes).

15. **Example—Specialised groups.**—Large numbers, adequate facilities and coaches.

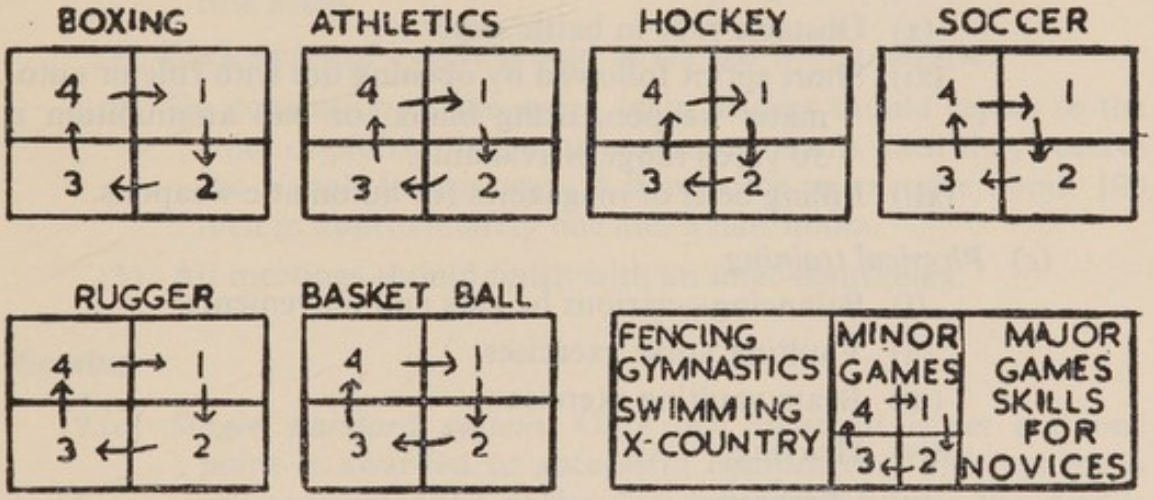


Fig. 1

Notes:

(i) Lesson plan required for each game or sport.

(ii) Change round as in para 14 but within the individual game or sport only.

Section 3: POTTED SPORTS

16. **Potted sports meeting**

A potted sports meeting is a good method of exercising a large number of men of any degree of fitness at one time. A well-run potted sports meeting can be both enjoyable and purposeful and can form

a useful part of unit training. It can be held outdoors or indoors and can easily be adjusted to suit limitations of space.

17. **Events**

The following classified lists of events are given as suggestions and there are of course many others which can be included and which are suitable for various arms of the service.

(*a*) *Athletics*

(i) Long jump; (ii) High jump; (iii) Stride jump; (iv) Hop, step and jump; (v) Short sprints; (vi) Relay races; (vii) Putting the shot; (viii) Throwing javelin; (ix) Throwing discus; (x) Team races; (xi) Modified hurdle race; (xii) Obstacle race.

(*b*) *Military*

(i) Grenade throwing for accuracy, with dummy grenades.

(ii) Bayonet discs or sack after short sprint.

(iii) Short sprint in full battle order.

(iv) Relay race handing over rifle instead of baton.

(v) Relay races in pairs with ammunition boxes.

(vi) Automatic weapons team races.

(vii) Fireman's lift relay race.

(viii) Alarm race.

(ix) Filling sandbags, working in pairs.

(x) Obstacle race in battle order.

(xi) Short sprint followed by opening fire with rifle or automatic weapon, using blank, or ball ammunition if 30 yards range is available.

(xii) Filling belts of magazines for automatic weapons.

(*c*) *Physical training*

(i) Balancing—various heights and movements.

(ii) Vaulting horse exercises.

(iii) Beam vaulting exercises.

(iv) Heaving.

(v) Climbing.

(vi) Skipping.

(vii) Insteps to beam test.

(viii) Throwing or heaving.

(ix) Medicine ball passing (various) timed by stopwatch.

(x) Log exercises (various) timed by stopwatch.

(*d*) *Gymkhana*

(i) Wheelbarrow relay race.

(ii) Shooting at goal (association or rugby football, hockey or basket ball) varying size, etc. of goal.

(iii) Dribbling relay race (football, hockey, basket ball, etc).

(iv) Slow bicycle race.

(v) Tug-of-war.

(vi) Chariot race.

(vii) Bowling or throwing at wicket.

(viii) Catching cricket-ball (distances varied).

(ix) Soft-ball pitching.

(x) Potato race.

(xi) Sack relay race.

(xii) Rugby football passing relay.

Method of organization

18. The organization is comparatively simple, but adequate preparation is essential.

(*a*) Available men should be arranged in teams of equal strength.

(*b*) If possible there should be as many events, excluding the relay, as there are teams.

(*c*) A programme should be arranged.

(*d*) Officials should be detailed for their duties.

(*e*) Team leaders (not necessarily non-playing) should be issued with a copy of the programme and should take teams to first event.

(*f*) Each series of events should be started with a whistle.

(*g*) On conclusion of the event, team leaders should report to the chief organizer, but must not move teams until they receive the signal. In this way, it is possible to exercise about 100 men in approximately one and a half hours.

(*h*) All meetings should finish with an inter-team relay.

Scoring

19.(*a*) *Single standard system.* Only one standard is set and one point is awarded to successful competitors. This system is not recommended unless it is impossible to use the double standard system.

(*b*) *Double standard system.* High and low standards are set for each event. All competitors passing the higher standard receive TWO points, all competitors passing the lower standard receive ONE point.

(*c*) Where time, space and numbers permit, a *treble standard system* could be employed. High standards scoring THREE points, intermediate standard scoring TWO points and low standard scoring ONE point. This system could be used to good advantage, for example, when selecting potential athletes from men of unknown ability.

Standards

20. In deciding on the scale of standards, it is advisable to put a few men of average ability through the various events before the sports. Fix the standards according to their results, aiming at 25 per cent passing the higher standard, 50 per cent of the remainder passing the lower standard.

Method of conducting

21. Judges and timekeepers must work together. In the double standard system, one pair takes the times and notes the numbers passing the higher standard and the other pair those passing the lower standard.

(*a*) *Track events*

(i) Run in heats about six.

(ii) Names of men are usually only necessary when the performance of an individual is worthy of note.

(iii) Only one attempt allowed in a track event.

(iv) Vary the events as much as possible and limit running events to a maximum of 100 yards.

(v) Run relay races according to space available (no system of scoring with standards used).

(vi) For indoor sports, the relay should always be broken up by a simple obstacle or a compulsory agility item, such as a backward roll.

(*b*) *Field events*

(i) Only two attempts at each event.

(ii) Success at any height, or distance counts; do not allow another attempt after a success.

(iii) In jumping for height, two attempts may be permitted at each height in the double standard.

(iv) In throwing events and jumping for distance, the standards are marked on the ground.

22. **Specimen athletic programme of order of events for six teams**

	1st	2nd	3rd	4th	5th	6th	7th
No. 1 team	Sprint	Jav	Discus	Shot	LJ	HJ	Relay
No. 2 team	HJ	Sprint	Jav	Discus	Shot	LJ	Relay
No. 3 team	LJ	HJ	Sprint	Jav	Discus	Shot	Relay
No. 4 team	Shot	LJ	HJ	Sprint	Jav	Discus	Relay
No. 5 team	Discus	Shot	LJ	HJ	Sprint	Jav	Relay
No. 6 team	Jav	Discus	Shot	LJ	HJ	Sprint	Relay

HJ = High jump. LJ = Long jump. Jav = Javelin.

23. **Specimen result card**

Team—No. 3 platoon	Event—High jump
5 competitors passed high standard	10 points
6 competitors passed low standard	6 points
TOTAL points scored	16

(Signed) XYZ.....JUDGE

Each judge should be given one card for each team, which he should complete and pass to the recorder after each team has completed that event.

24.(*a*) The following example of the **chief recorders scoreboard** at the conclusion of a potted sports meeting will explain how the final order of merit of teams is arrived at:

Team No.	Sprint		Javelin		Discus		Shot		Long jump		High jump		Relay race	Total place	Final order of merit
	Points	Place	Points	Place	Points	Place	Points	Place	Points	Place	Points	Place	Place		
1	8	1	6	2½	5	2	7	4½	4	4½	2	3½	3	21	1st
2	3	5	7	1	4	4	8	3	6	2	0	6	5	26	4th*
3	4	4	5	4	4	4	9	2	4	4½	4	1	6	25½	3rd
4	7	2	4	2½	3	6	7	4½	3	6	1	5	1	27	6th
5	6	3	3	6	4	4	6	6	5	3	3	2	2	26	4th*
6	2	6	4	5	6	1	10	1	7	1	2	3½	4	21½	2nd

Notes:

(i) Result will be decided by lowest total number of places.

(ii) In the event of a tie on total places, the final order of merit may be decided on the result of the relay race.

(*b*) An alternative method of scoring is as follows:

(i) Six teams competing.

(ii) The recorder receives result cards for each event which shows the points gained by each team.

(iii) Points are then converted into MARKS e.g. winning team receives 6 marks, 2nd 5 marks 3rd 4 marks, 4th 3 marks, 5th 2 marks, 6th 1 mark.

(iv) If 3 teams tie for first place; divide 6 by 3 and award each team 2 marks.

If 2 teams tie for 2nd place; divide 5 + 4 by 2 and award each team 4½ marks.

(v) Should a team be disqualified for any one event, it receives nil points for that event.

(vi) The team with the HIGHEST marks, and therefore the best average, wins the competition.

There is little to choose between the above two methods of arriving at a result and the instructor may use either method. The result should never be decided on the points scored alone as a team which was outstanding at one event could possibly obtain sufficient points at that particular event to win the competition, even if it was placed lowest in each of the other events.

Section 4: POTTED MINOR TEAM GAMES AND POTTED TEAM ACTIVITIES

25. A simple and effective method of providing exercise, useful training and recreation for large numbers can be organized in the form of potted minor team games or potted team activities, e.g. alarm race, surmounting minor obstacles, carrying log race, moving equipment race, bridge building race, etc.

26. **The value of team activities are as follows:**

(*a*) All members are performing together (no waiting for a turn).

(*b*) Practice is obtained in basic skills of major games and military training.

(*c*) The spirit of team work and competition is developed.

(*d*) Organization and scoring are not complicated.

(*e*) Large numbers of men can be exercised in the minimum space with the minimum amount of equipment.

27. **Method of organization**

(*a*) The men should be arranged in teams of equal strength.

(*b*) Suitable minor team games or team activities should be chosen according to prevailing conditions. Half the number of games or activities to the number of teams will be required, and each game or activity must be designed to last approximately the same length of time.

(*c*) The programme should be arranged as far as possible so that each team competes at each event against a different team.

(*d*) A few minutes should be allowed at each event, to enable the officials to brief the teams, before the actual competition begins.

(*e*) Careful preparation of areas, equipment, score-cards, programmes, etc, is necessary, to ensure success.

(*f*) The rules must be simple.

(*g*) The organizer must control the ' change round ' of events, e.g. *Signal* 1. — Teams move to the next event and are briefed by the official in charge.

Signal 2. — Competition begins at each event (official in charge controls half-time change of sides if necessary).

Signal 3. — Competition at each event stops and the results are sent to the recorder.

Signal 1. — Change round to the next event, and so on.

28. *Example.* The 'clock' system of arranging events, with eight teams competing, (therefore four events), and the starting positions of all teams is shown in the following diagram (Fig. 2).

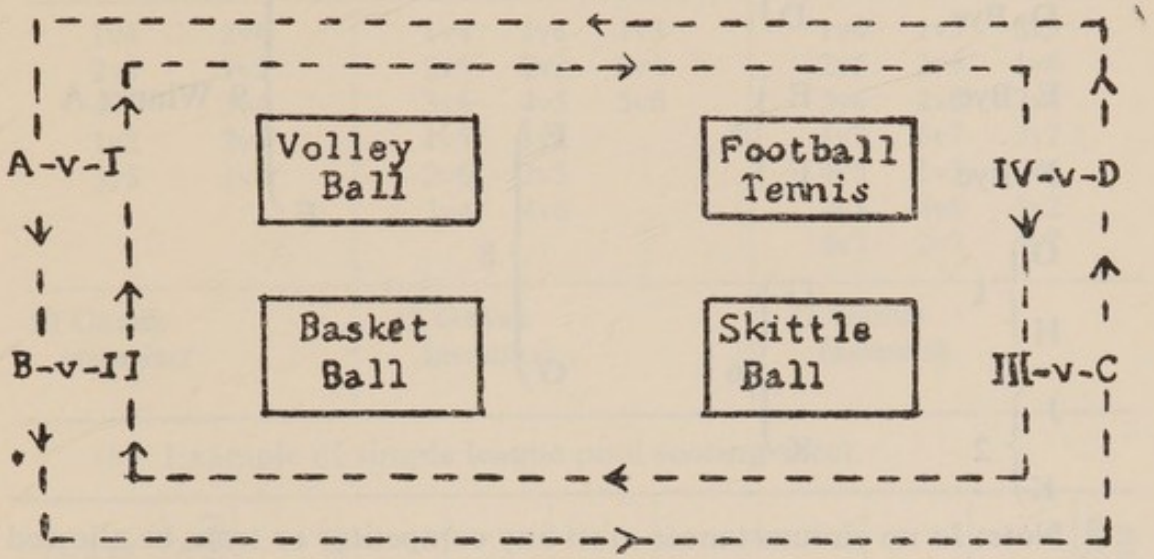


Fig. 2

29. *Final discussion.* The score board should be exhibited and, if necessary, explained. Points which have arisen during the competition should be freely discussed. Interpretation of the rules and coaching points can be illustrated, and often many points of interest and value to both officials and competitors arise during this final few minutes of the recreational training period.

Section 5: PLANNING AND PREPARATION

Knock-out system

30. The method of conducting a draw for a knock-out competition is as follows:

(*a*) The number of entries in a competition, if not already a power of 2 i.e. 4, 8, 16, 32, etc. must be made so by means of byes.

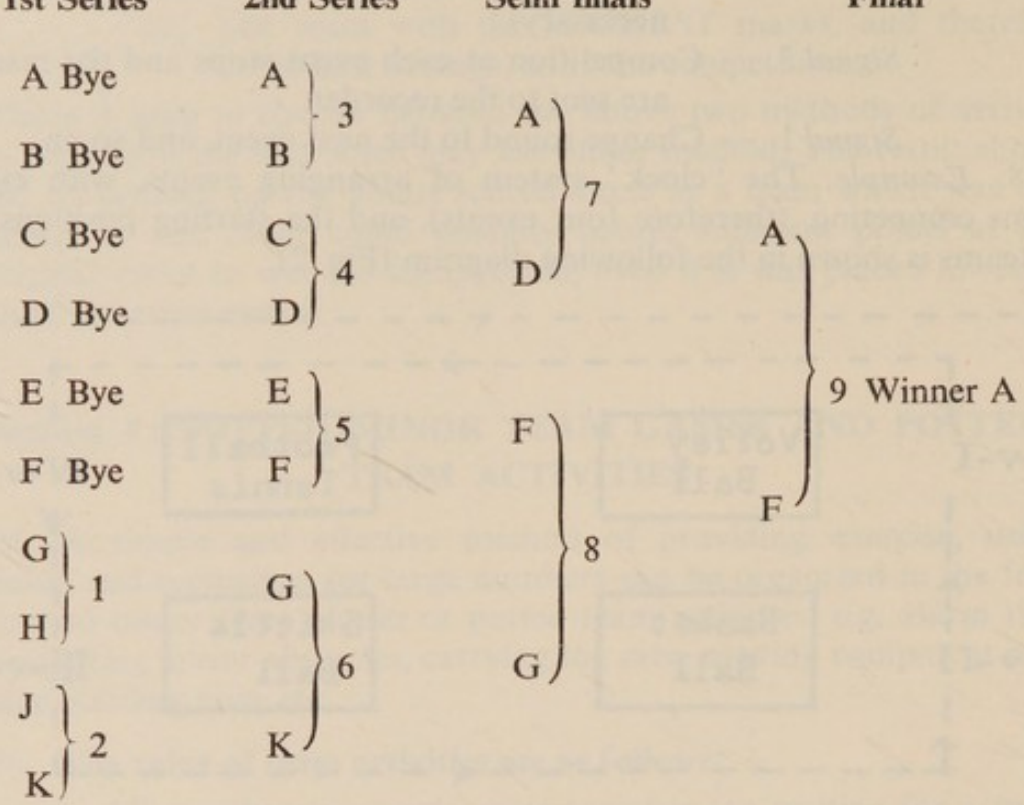
(*b*) For example, if there are five entries for a competition, the number must be brought up to eight by giving byes to three competitors or teams.

(*c*) By this system all byes are decided during the first series.

(*d*) The best means of 'drawing' is to put the names of all the entries in a cap. If there are ten entries, then there must be six byes in order to bring the total to 16.

(*e*) The first six names drawn out of the cap will be given byes, while the remaining four will compete in the same order as they are drawn, i.e. seventh v eighth, and ninth v tenth.

(*f*) Example of a draw:



Note: In no circumstances must any competitor or team be allowed two byes in any competition before others have received one.

(*g*) Each major sport has rulings on the conduct of draws and the relevant regulations should be consulted when organizing a major competition.

(*h*) Seeding. In certain competitions, players or teams of known ability are allowed to enter the later stages of a competition. This is called seeding.

The following table illustrates further:

No. of entrants		No. of byes	Matches in first series
5	3 short of 8	3	1
6	2 short of 8	2	2
7	1 short of 8	1	3
8	0 short of 8	0	4
9	7 short of 16	7	1
10	6 short of 16	6	2
11	5 short of 16	5	3
12	4 short of 16	4	4
13	3 short of 16	3	5
14	2 short of 16	2	6
15	1 short of 16	1	7
16	0 short of 16	0	8

League or pool system

31. By this method every competitor or team competes against each other.

(*a*) Example arrangement of league or pool matches.

Five teams (or individuals)		Six teams (or individuals)			Seven teams (or individuals)		
1v4	2v4	1v4	1v6	1v3	1v4	1v5	3v5
2v3	1v5	2v5	2v3	2v4	2v5	3v4	1v6
4v5	3v4	3v6	4v5	5v6	3v6	2v6	2v4
1v2	2v5	1v5	1v2		1v7	5v7	3v7
3v5	1v3	2v6	3v5		4v5	1v3	5v6
		3v4	4v6		2v3	4v6	1v2
					6v7	2v7	4v7
10 Games (assaults)		15 Games (assaults)			21 Games (assaults)		

(*b*) Example of simple league pool scoring sheet.

TEAM (or individual)	Team/ Individual Nos.	"A" 1	"B" 2	"C" 3	"D" 4	5	6	7	8	Total Wins or Points
"A" coy	1		1–2 L	4–1 W						
"B" coy	2	2–1 W								
"C" coy	3	1–4 L								
"D" coy	4									
	5									
	6									
	7									
	8									

Win (W) = 2 points.

Draw (X) = 1 point.

Loser (L) = 0 points.

32. For further details of conducting the knock-out system and the pool system for boxing and fencing respectively see the current issue of the Army Sport's Control Board's publication 'Games and Sports in the army'.

33—37. Reserved.

CHAPTER 2

Minor Team Games

Section 6: GENERAL

38. Minor team games can play a useful part in teaching men who have not played any major game the simple skills of ball control and general team tactics. By the informal manner in which they are played, the simplicity of the rules, the compactness of playing areas required and the smaller number of players involved, men gain confidence quickly and their all-round ability is improved.

39. Minor team games must be well chosen and purposeful so that the qualities required in a corresponding major game may be developed. Every minor team game should be played with the definite aim of developing one or more qualities required in a major game, and must particularly encourage the less adept players to further self-effort.

40. The list of minor team games given in the following section is comprehensive and should afford a choice of games to meet most requirements.

41. Minor games can be played either in fairly limited space using the potted minor team games system or in conjunction with major games.

Section 7: DESCRIPTION

42. The following minor team games are supplementary to the minor team games shown elsewhere in this series of pamphlets. The games chosen are useful in training novices and 'backward' major games players in elementary ball-play and in developing games-sense.

They can also be used to introduce variety into the training schedules of unit teams but, if used for this purpose, care must be taken that the minor games chosen are similar in nature to the major game for which the team is training.

43. Games may be altered or adjusted to suit the various major games or individual requirements. A few of the lesser known games are given in detail.

(*a*) *Scotch handball.* Teams in single file. Leader four yards from and facing team. On ' go ' he throws ball to first man, who runs round team, returns ball to leader and kneels down in original place. Repeat with all members of team. Each player must run round every member of his own file.

(*b*) *Corner spry.* Players in each team stand behind a line facing the leader, who throws the ball to the first man in the line. He returns it, then back to the second man, and so on through the team. When the ball reaches the last player, instead of returning it, he takes the place of the leader, who takes the place of the first player, and the whole line moves down one place. This is repeated until each player in turn has had his turn at being leader.

(*c*) *Team passing.* The class is divided into two teams; each marks down one of the opposing team and tries to intercept the ball, the object being to make the greatest number of consecutive passes.

(*d*) *Ball passing versus team running.* One team runs a relay race on a prescribed course while the other team passes a ball from player to player, making as many passes as possible before all the players of the first team have completed the course. The best formation for the team passing the ball is in a circle, facing outwards. Teams then change places and the game is repeated. The team scoring the greatest number of passes wins.

(*e*) *Team dodge ball.* Two teams compete, one forming a large circle, and the other inside the circle. The outside team endeavours to eliminate the other players by hitting them with a thrown ball below the knees. Teams change over on a fixed time limit. The team scoring the most hits is the winner. Two or more balls may be used according to the size of the teams.

(*f*) *Wheel relay.* Team formed up like the spokes of a wheel within a circle. Outside player of each line runs round outside the circle dribbling the ball, and returns to inside place, then passes ball along the line to next player who runs round in his turn, and so on through the team. The spoke of the wheel first completed wins.

(*g*) Five a side football or hockey.

(*h*) Rounders (football, rugby).

(*j*) Seven a side rugby.

(*k*) Hand ball (indoors or outdoors).

(*l*) Improvised basket ball.

(*m*) Relays with football, rugby ball or hockey stick and ball e.g. wheel relay; circle passing relay; circle passing and running relay; rugby passing relay; dribbling and passing relays of various kinds.

(*n*) Rugby touch.

(*o*) Skittle ball.

(*p*) Soft ball.

(*q*) Tunnel ball with two or more balls for each team.

(*r*) Volley ball.

(Note: Playing areas must be clearly marked and adequate equipment must be available to ensure maximum activity).

44—48. Reserved.

PART II: ATHLETICS

CHAPTER 3

General Principles and Organization of Training

Section 8: GENERAL

49. Although athletics have always been recognized as part of recreational training in the Army, it is doubtful whether they were really considered to be a major sport until a few years ago. The rising standard of athletic performances all over the world, and the tremendous amount of work done by the authorities in this country to popularize athletics, have now resulted in widespread interest in this sport throughout the Army.

Military value

50. In no other sport can achievement be so accurately measured as in athletics. The military value of athletics is obvious since a successful athlete must combine the following attributes:

(*a*) Will-power, determination and fighting spirit.
(*b*) Enthusiasm.
(*c*) Strength, speed and endurance.
(*d*) Self reliance.
(*e*) Team spirit.

51. This part of the pamphlet is designed merely as a brief guide to the staff of the APTC and to assistant instructors.

AAA rules, Army AA rules, and notes on the organization of athletic meetings

52. Details of the above-named subjects are published in the current volume of ' Games and Sports in the Army '.

Section 9: QUALITIES REQUIRED IN ATHLETES

General

53. Everybody who is reasonably fit and healthy is able to perform in certain athletic events. The standard reached will vary according to the natural ability of the performer.

54. In order to attain any standards of performance, certain qualities are required. They are:

(*a*) Natural aptitude.
(*b*) The necessary physical make-up.

(*c*) The right mental outlook.
(*d*) Good co-ordination.
(*e*) Ability to relax both physically and mentally.
(*f*) Ability to assimilate knowledge.

Physical qualities

55. The physical qualities required by an athlete are as follows:

(*a*) *Strength.* The amount of power needed to enable an athlete to propel himself at maximum speed for the required distance.

(*b*) *Speed.* This quality is complementary to effective strength, and its importance must be kept in mind.

(*c*) *Stamina.* This factor is of paramount importance, and any training system should be designed to develop it progressively.

(*d*) *Skills.* As in other sports, the actual technique is made up of many separate skills, which must be perfected and correlated, if success is to be obtained.

(*e*) *Technique.* The welding of all the skills into one is called the technique of an athletic event. One particular technique used by a world-record holder might not necessarily suit another athlete's own particular requirements. Therefore a coach must select and develop the most suitable and effective technique for each individual athlete.

(*f*) *Knowledge.* The athlete himself must assimilate as much knowledge of his event as possible. Unless he has this knowledge, and the intelligence to absorb his coach's instructions, the endeavours of even the best and most conscientious coach will not be fully productive.

(*g*) *Mental attitude.* No athlete, however well fitted physically and technically, will ever be out-standing at his event for any length of time, unless his mental equipment is in keeping with, and supplementary to, his other attributes. He must have the enthusiasm to work hard and conscientiously to a pre-planned programme, both with and without supervision. He should also possess the determination to better himself in training or competition, and the will-power to fight against adversities. Finally he must be willing to accept criticism from others.

(*h*) *Age.* A sport, in which so much hard training and concentrated physical and mental effort is needed, obviously imposes certain age limitations. The lower limit for senior competition has been laid down by the associations concerned. The upper age-limit depends on the event in which the athlete specialises, but the best performances are achieved by competitors in the 20—28 age group in events which require a large effort over a comparatively brief period. Older athletes are usually found in events such as long distance running and walking, where effort and energy are expended over a long period at a comparatively low rate.

Section 10: TECHNIQUE AND COACHING

Technique

56. All athletic techniques are based on sound mechanical principles, and an athlete must be able to apply these principles and incorporate them in his style, if he is to obtain the best results. Natural ability alone is not enough.

57. For the benefit of instructors and performers alike, all events have been covered as comprehensively as possible in a short pamphlet of this nature. For a detailed description of the technique for all events, it will be necessary to refer to a coaching manual such as the book published by the Amateur Athletic Association.

Instructors should be learning at all times, and they must try to assimilate as much useful knowledge as possible. An instructor's ability as a coach will ultimately be determined by results.

Qualities of a coach

58. The essential factors required by the successful coach are:

(*a*) A genuine interest in athletics.

(*b*) Enthusiasm.

(*c*) Theoretical knowledge of the various events.

(*d*) The ability to impart knowledge.

59. Coaching is largely learned by experience and practical coaching must be learned in a planned, methodical and progressive manner. It requires the ability to see and analyse the fudamental features of technique. Some definite point of the action should be selected and the coach must watch and concentrate solely on this point. He must also know where and how to look for it, and should position himself accordingly.

60. Having observed the athlete closely, the coach must have in his mind a summary of all he has seen. He must be able to analyse the cause of any fault and to differentiate between a fault and the personal idiosyncrasies of the athlete. Major faults must be checked first; correction of these will usually eliminate most of the minor faults automatically.

Personal characteristics of style must not be confused with the fundamental principles of technique. An athlete should never be allowed to copy, action for action, the performance of another athlete. Two athletes may be taught exactly the same thing, but the finished product in each case will probably be different.

General coaching notes

61.(*a*) *Attitude.* The point of greatest importance is probably the attitude between coach and athlete. Firstly, they must know each other; secondly they must have confidence in each other's ability.

(*b*) *Baths.* Swimming should not normally be allowed, as immersion in water causes the muscles to lose their athletic tone. While this may not be consciously felt by the athlete, it will be seen in a reduction in the standard of performance. After training a tepid shower is recommended, as a hot bath will become a steaming-process, and a cold shower will tend to act as a shock, if taken too soon after vigorous exercise.

(*c*) *Weight.* An athlete's weight should be taken at regular intervals. This is most important and a graph is the most useful method of recording the results. Every athlete has an optimum weight. The coach must know this and should, by reference to the weight chart, forestall any falling-off in performance or deterioration in health.

(*d*) *Staleness.* The view is now held by a great number of coaches that there is no such thing as physical staleness, but that this condition is brought about by mental stresses. Worry and strain undoubtedly cause staleness, but it is also true to say that staleness is very often created by too much intensive training. The human body is not an impersonal mechanical creation, and it should always be remembered that most athletes are taking part in the sport purely for the fun of it. Their attitude should not be spoiled by the coach attempting to make robots of them.

Conclusion

62. The success of failure of a coach depends largely on the material he has to work with, and as each human being is different from another, training methods have been designed to cater for individuals rather than the mass. This fact should always be kept in mind. Although the fundamental principles apply to the majority of athletes, a coach should always keep an open mind. He should read and assimilate knowledge, but should preserve his own individuality and ideas.

Section 11 : ORGANIZATION OF UNIT TRAINING

General

63. The notes on the organization of recreational training, given in part 1 of pamphlet No. 5 should be read in conjunction with this section. Instructors are also referred to pamphlet No. 1 chapter 3 which gives details of the general principles of instruction for all types of physical and recreational training.

64. For many reasons, the system adopted for training athletes in the Army must vary considerably from that employed in civilian life. It must be remembered that athletics is but one part of the general physical training programme in the Army, the ultimate aim of which is the development of physically efficient soldiers.

65. Many factors affect athletic training in the Army:

(*a*) *Numbers*

(i) The army coach generally has to deal with a far greater number of men than his civilian equivalent. His task is therefore far more difficult.

(ii) Instructors should combat the above problem by grouping the men according to events and ability standards. If possible, training sessions for the various groups should be arranged at different times, thus ensuring maximum supervision and coaching.

(iii) Instructors should enlist the aid of enthusiastic officers and NCO's to assist them in coaching.

(*b*) *Time available.* Military duties often interfere with training schedules, affecting both the daily routine of the athletes and their overall training programme. Every effort must be made for practice sessions to be regular, and it is most important that an all-the-year-round syllabus is planned. The practice of getting an athletic team together two or three weeks before the unit sports must be eliminated.

(*c*) *Equipment*

(i) Most athletic equipment is expensive. It is usually in short supply and every effort must be made to make the best possible use of it and to maintain it in good order.

(ii) Tracks, throwing and jumping areas, etc. should be marked out as accurately as possible.

(iii) Many aids to training can be improvised, but great care must be taken to ensure that any such apparatus or implement is perfectly safe.

(iv) Teams should always be smartly turned out. The equipping of a team with the correct dress (spikes, shorts, track-suits, etc,) is of great psychological value.

(*d*) *Instructors and coaches*

All APTC instructors are able to coach in athletics up to ' unit level '. Their services should be implemented by unit officers and NCOs who are interested and have a knowledge of athletics. Courses are conducted at Command Schools of Physical Training and at the Army School of Physical Training, Aldershot, for the purpose of qualifying unit officers and NCOs as Army AA coaches.

Out of season training

66. Out of season training is of the utmost importance and an integral part of the overall training plan. During the winter months, when outside training is curtailed, much valuable work can be performed indoors. Most units have a gymnasium or large hall.

67. With a little ingenuity, most events can be practised in a gymnasium. Some suggestions of the type of work possible are given below:

(*a*) General physical training.

(*b*) Weight-training.

(*c*) Circuit training.

(*d*) Running events:

(i) Starting practice. (Actual running practice should be performed outside).

(ii) All stages of hurdling.

(iii) Steeplechase practice over obstacles.

(*e*) Pole-vaulting and high jump, technique training.

(*f*) Long jump and hop, step and jump can be practised provided that the landing area is made soft by the use of mattresses, etc.

(*g*) Throwing events. Camouflage or cricket nets make good throwing nets. Properly supported, they will be perfectly safe and enable training to continue with the discus, shot and improvised hammer. Even the javelin can be practised indoors in the following manner. A wire is erected running the length of the gymnasium, on which a 'runner', which is attached to the javelin by another wire, may run freely. A rubber head must be placed on the end of the javelin.

NOTE. All markings (circles, etc) must be accurately measured and drawn on the floor.

68. Obviously, no event can be performed as satisfactorily in an improvised indoor area as would be possible out-of-doors. Although this is a disadvantage, indoor-training affords the coach the opportunity of concentrating more on particular skills and technique. After a period of such training, it will be generally found that the athletes are extremely keen to get out on to the track to ascertain the improvement made. Thus, physical and mental progress has been achieved during a period which otherwise would have been of no benefit to the athletes.

Track and areas

69. The track and areas should be marked-out as early as possible in the year, care being taken to avoid interfering with pitches, etc, which have been prepared for the winter games such as association football, rugby, etc. The most difficult problem will usually be the siting and construction of the various jumping-pits required. If possible, permanent pits should be constructed, which will serve equally well for practice and competition purposes. These must be accurately measured and carefully maintained. Instructors are referred to 'Games and Sports in the Army', which contains details of all measurements for athletic areas, and instructions regarding the maintainance of grounds.

Dates of meetings

70. The dates of all forthcoming meetings must be ascertained, as the whole training schedule is based on the dates when the athletes should be in ' peak ' condition.

Training programme

71. It is again emphasized that training should be continued throughout the year. The coach must set targets of achievement for his athletes. His own target must be to present his men at the selected competitions in their best possible physical and mental condition. The following points should be noted:

(*a*) The athletes should always be informed of the general scheme of training, as it is they who will have to do the actual physical work and adjust themselves mentally to the effort expected of them.

(*b*) Individual training programmes should be compiled after consultation with the athletes themselves. A coach must ensure that the performances demanded of an athlete are within his physical capabilities, and that the programme devised does not interfere with any military duties, etc, to be carried out by the athlete.

(*c*) Attention must be given to the question of relaxation and enjoyment. Schedules must not be such that training precludes every other activity or form of enjoyment.

Selection of potential athletes

72. There are several ways of discovering athletic performers:

(*a*) *Potted sports meeting* (*athletics*). From the results obtained, instructors will be able to see who are the most likely and talented competitors.

(*b*) *Work in the gymnasium.* By observing classes working in the gymnasium during normal physical training periods, an experienced instructor can often select men who possess potential athletic ability .

(*c*) *Previous record.* Instructors should ensure that, on arrival at any unit, a new man completes a form giving particulars of any previous athletic or games performance.

Boys' training

73. Instructors attached to boys' training units have an excellent opportunity of furthering the interest of athletics in the Army. Recreational training plays an important part in the training of boys, and every effort must be made to develop them as potential army athletes.

74—78. Reserved.

CHAPTER 4

Training

Section 12 : GENERAL

Individual requirements

79. The training requirements of an athlete can be divided into phases :

(*a*) Conditioning work to maintain physical fitness and natural aptitude.

(*b*) Progressive training to develop strength, speed and co-ordination.

(*c*) Event training to improve technique and skill.

(*d*) Preparation for competition which enables the athlete to reach peak-form at the required time.

Group training

80. Although each athlete has his own shortcomings, and needs special training to overcome these weaknesses, a great amount can be done by letting groups of athletes work on similar, though slightly modified, training schedules, e.g. sprinters and long jumpers can work in groups, helping and encouraging each other.

Interest

81. To keep the athletes' interest in their training programme, the coach must always work out a schedule which is varied and stimulating. New and purposeful exercises and skills should be introduced into the programme at the slightest indication of disinterest.

Planning

82. The coach must plan schedules of training for groups and for individuals so that a steady progression in performance is maintained and the athlete reaches his peak fitness at the correct time.

Weight training

83. Weight training can play a very valuable part in an athlete's training and an increasingly large number of champion performers include it in their schedules. The aim of weight training is to develop the maximum strength that the natural physique of the athlete will allow.

84. Most of it should be carried out during the winter (out of season) period of preparation, although light work should still be performed during the pre-season and season parts of the year. It is the quickest, and in most cases the best way, to increase an athlete's strength.

85. Any weight-training programme for an athlete must be composed and supervised by an experienced instructor who has a thorough knowledge of the principles involved and the methods of application. Great care must be taken that the schedules devised are progressive and effective.

Exercises should be designed and prescribed after careful analysis by the instructor of the specific action or part of an action in which more strength is required. The general strength, ability and fitness of the individual athlete must also be carefully considered.

86. Weight-assisted passive exercises for suppling, etc, must be very carefully checked and controlled and should only be included if recommended by an expert.

87. Generally, all weight-training exercises for athletic events should be performed fairly swiftly, the number of repetitions and the amount of weight used depending on the object of each particular exercise and the ability of the individual athlete.

Food, rest, smoking, drinking

88. There are so many divergent views and aspects to these subjects that it is impracticable to lay down hard and fast rules. In general, the athlete should eat foods which produce strength and energy. As far as possible the athlete's food consumption, his meal-times and intervening rest-periods should coincide with his normal domestic arrangements. A sudden change-over to special meals, times, etc, is quite likely to have a detrimental effect on his performance.

Smoking and drinking should be curtailed as much as possible and, if necessary, cut out altogether.

Intensity of purpose

89. From the very beginning of the athlete's preparation there must be built up in him an ' intensity of purpose '. The performer and coach alike must devote themselves wholeheartedly to attaining the target they have set themselves, or little success will be attained.

Amount of training

90. The amount of time devoted to training will depend very largely on a combination of factors. Very briefly these are: (*a*) Events and training facilities; (*b*) Age; (*c*) Natural ability and physique; (*d*) Time available; (*e*) Assistant coaches; (*f*) Weather conditions; (*g*) Competition programme.

Section 13 : TRAINING SEASONS

General

91. Different views have been expressed and various descriptions given to classify the various training seasons. The general view is that the working year of the athlete may be divided as follows: (*a*) Out of season; (*b*) Pre-season; (*c*) Early season; (*d*) Mid-season; (*e*) Peak season; (*f*) Late season.

92. The following description of types of training and points for consideration during the various seasons is given as a guide on which training schedules to suit individual requirements may be based.

Out of season

93. There should be no period in the year when an athlete allows himself to become unfit. This does not mean that he attempts to keep in peak condition throughout the twelve months, but that he must maintain a standard of basic fitness through regular exercise. Exactly how much he does will depend upon the athlete himself, his job, the facilities and time at his disposal. His ability at his event will also determine the type of training which he will need to perform out of season. An athlete must get down to the really hard work of learning technique during the winter months so that some of the fundamental movements may be almost automatic and technically perfect before the start of the competitive season.

94. The experienced athlete, who has a well-established and sound technique, need not spend so much time in learning technique, except to eliminate any faults which may have come to light during the previous season. All athletes, whether experienced or inexperienced, should devote at least ten minutes daily to exercises appertaining to their event. Another method of helping to maintain basic fitness is walking. A brisk walk of two miles daily will be found invaluable, particularly to the sedentary worker.

95. Games such as badminton, squash racquets, fives and basketball act as a mental rest from athletics and help to keep the body healthy. Swimming is valuable for breathing and all-round physical develpment, but should not be carried into the competition season. Much benefit can be gained from joining a well-organized physical training class, and it may be possible for the athlete to combine this with weight-training for strength. Those who are not in a position to join a class should perform basic fitness exercises on their own. Leg-strength can be built up by 'jogging' for up to three miles, preferably on grass, twice a week.

During the season

96. Each athlete must consider his own particular requirements and assist his coach to work out a suitable programme.
Assuming that the athlete has kept himself basically fit during the winter, he will need very little intensive training or conditioning. The programme of work should flow smoothly from 'out of season' to 'season' without violent changes in routine. Some men take longer to get into condition than others, and whilst there are athletes who thrive on hard work, others need a comparatively light programme.
A work-out should always be preceded by a thorough limber-up. The process of limbering-up should last from 20 minutes to half an hour, and it should be done in a track-suit with plenty of warm clothing underneath. Briefly, the object of limbering-up is to warm the body gradually and to ensure that the heart and lungs are prepared for the

harder work to follow. Muscles are also made less liable to injury when they are warm. This limbering-up is very necessary as it loosens the body generally and gives greater speed and strength of movement. Each athlete should experiment to find how much of this preliminary exercise he needs.

A typical warm-up would be:

(i) Slow jogging on grass. (warm clothing, track suit, scarf and gym shoes).

(ii) 'Winders' or 'Wind sprints' in which the athlete jogs and runs alternately, covering about 40 yards at each stage. He builds up into a sprint of about 20 yards, and then eases down very slowly to a slow jog or walk before repeating the process. As the athlete becomes fitter, so the period of sprinting may be increased. The athlete then does a series of general suppling and strengthening exercises, rather like a modified PT table, and immediately follows these with his own technique exercises.

97. All the exercises should be performed wearing a track-suit and rubber-soled shoes and by the time the exercises are complete the athlete should have reached a very mild state of fatigue. A short rest of a few minutes should follow prior to real business of the work-out. On completion of the training work-out, it is advisable to jog lightly, wearing a track-suit and PT shoes for a quarter to half a mile as a limber-down prior to having a shower and a rub-down.

Pre-season. (Three weeks of five training days a week)

98. This period is devoted primarily to the attainment of basic physical condition. Time is also given to the technical fundamentals of the event. Leg-fitness is fostered by taking brisk walks of up to five miles, and by performing the wind sprints already mentioned. Strength, suppleness and agility are also obtained by carrying out the type of exercises already mentioned. Work in the gymnasium is of great value at this time.

Early season. (Four weeks of five training days a week)

99. The daily training periods are longer and more intensive during these four weeks. The athlete continues to work for general fitness, strength, agility and suppleness, but now the technique of the event is the main consideration.

Mid-season. (Three weeks of four or five training days a week)

100. At this stage the athlete passes from the elementary to the more advanced details of technique and 'polishes' his performance. He now eases the severity of the daily session, to accumulate a fund of nervous energy for competition. The 'heavy' training days should normally be Tuesdays and Wednesdays, so that the work lessens in its severity towards the week-end when, in all probability, the athlete either competes, or else trains, under competition conditions.

Peak season. (Five to six weeks of two or three days a week)

101. By now the athlete should be ready for competition and in the peak of condition. He should rely mainly on competition to improve his speed, strength and performance.

The accent during training should be on light and varied work, the amount performed decreasing in severity during the week.

This is probably the hardest time of the year for the coach to devise schedules of training. To do it successfully, he must know the athlete intimately. Generally speaking, it is better to veer towards a light programme as the athlete needs only enough work to keep him in trim.

Late season. (Five weeks of two training days a week)

102. The peak of condition should now have been reached. Corrections of technique made at this stage of the season should be of a minor character only. Here the training periods are even lighter than before, and an athlete may do no training performances at all throughout a week (although he will continue with his complementary work-out). He should continue to lessen the severity of the work towards the end of the week.

Section 14: CIRCUIT TRAINING

General

103. This form of training, which has been carried out for a considerable time on the continent and in this country under various names, is becoming increasingly popular.

104. It has several great advantages over ordinary group training or individual training under close supervision.

These advantages are as follows.

(*a*) The circuit can be laid out anywhere, in-doors or out-of-doors.
(*b*) It does not require much room.
(*c*) The equipment can easily be improvised.
(*d*) By adjusting the progression of the different exercises to the needs of individual athletes, the circuit can be used by a considerable number of performers.
(*e*) The athletes learn to work on their own to a laid down schedule against the clock and against the tape measure.
(*f*) A coach can supervise the general training, although he may be coaching at one particular group.
(*g*) The exercises are easy enough to be learned by everybody in a very short time.
(*h*) The physical all-round progress of the athlete can be measured more easily and satisfactorily than in many other forms of preparation.
(*j*) The stages and rate of progression can easily be adjusted to suit the needs of the athlete.
(*k*) This form of training needs only occasional 'testing' supervision.

Application of the circuit system

105. To enable a large number of athletes to work at the same time, but according to their own individual capacities, a number of exercises are selected and arranged in the form of a circuit around the gymnasium and numbered consecutively. They are arranged so that the athletes can proceed from one exercise to the next without undue fatigue. These exercises are simple to execute, since fitness-training should not be complicated by the need for particular skills. They should also be easily standardized so that they are performed in the same way every time and allow a fairly accurate regulation of the amount of work done. In addition, circuit exercises must have a beneficial effect on the individual requirements of the athletes.

106. The organization of the circuit is based on the following sequence: (*a*) *teaching;* (*b*) *testing;* (*c*) *timing.*

Teaching

107. On the first attendance the athlete learns the exercises to the satisfaction of the coach and then does three laps of the circuit performing learners' repetitions of each exercise. This is repeated at the next two attendances, by which time he is well-practised in the elementary skills involved, and is now ready to be tested to his maximum on the circuit.

Testing

108. The athlete is now tested to his maximum at each item in the circuit. For heavy resistance exercises, e.g. body-weight heaves or beam and dumb-bell work emphasizing strength, the test is for maximum number of repetitions or the maximum in half a minute, whichever is the lesser. For general endurance (activities such as bench-stepping, squat jumps, etc.), the test is for maximum repetitions or the number performed in one minute, whichever is the lesser. Rests of one minute should be allowed between tests.

Timing

109. The athlete at his next attendance performs three laps of the circuit at about half his maximum figures, but without rests between activities. The time is recorded, e.g. 21 minutes for three laps of a 10 activity circuit: This figure is reduced by one-third to ascertain his 'target' time, i.e. 14 minutes.

110. During subsequent attendances the athlete works his way around the circuit at his training rate, striving to attain three laps in 'target' time. When he achieves this, he is re-tested to maximum to obtain his new training rate. In this way the athlete achieves that increase in intensity of training which ensures increased fitness.

Section 15: TRAINING HINTS

Preliminary physical examination

111. It is always a good plan to have a thorough physical examination before going into training.

Diet

112. Generally speaking, the athlete should keep to his normal eating habits. He should not train for at least one hour after a meal as the blood cannot assist with the digestion of food and supply the muscles properly at the same time. On the day of a competition meal-times should be adjusted, if necessary, so that when the athlete is due to compete the stomach is nearly empty. The meal prior to a competition should be light and easily digestible. A cup of hot tea, with plenty of sugar, is beneficial between events.

Elimination

113. Athletes are not usually troubled with faulty elimination because of the exercise they take: regularity is the keyword. Frequent urination before competition is quite a natural occurrence and is due to nervousness.

Sleep

114. It is essential that every athlete has sufficient sleep each night. The amount varies from person to person, but is usually around eight hours. Regular sleep is very important.

Walking

115. Brisk walking is an excellent exercise. A walk of about two miles should be carried out every day, if possible, in addition to other forms of training.

Massage

116. This should always be carried out by a qualified masseur. Inexperienced individuals will probably do more harm than good.

A fully trained athlete should not need massage in the normal course of events. It might be necessary in the case of an injury, but it is then the responsibility of a doctor or physiotherapist. During the early season, massage may be used to advantage to ease sore or stiff muscles.

Smoking

117. Heavy smoking is not recommended for any athlete, and the middle and long distance runners are advised to abstain altogether.

Alcohol

118. Like smoking, alcohol in moderation has little effect, but it is better to do without it.

Staleness

119. This is largely a mental state, and the athlete who is stale may be irritable, lethargic, unenthusiastic or without appetite. Monotony in training or overwork are often responsible and training schedules should be carefully examined for any possible weakness. Illness, worry and lack of sleep are often factors concerned with this state.

Clothing and equipment

120. Shoes should fit snugly yet comfortably and care should be taken of all footwear.

Vests and shorts should be light and comfortable, permitting freedom of movement, but conforming with the relevant rules. The athlete should use only his own clothing and shoes and should not lend these items to others.

Section 16: EXAMPLES OF WEEKLY TRAINING PROGRAMMES

Weekly programme

121. A weekly programme should be made out according to the athlete's individual requirements and progress in training and competition. Some athletes require more and harder training than others, so only a guide can be given.

122. The following paragraphs give examples of early season, mid season, peak season and late season weekly training programmes which may be used as a guide to the athlete or coach who is preparing training schedules.

Hurdlers

123. **Early season (four weeks of five days a week)**

The work which the athlete carries out at this period is the most intensive part of his whole programme.

(*a*) *For all hurdlers*

(i) Starts from blocks to the first hurdle, so that correct striding to the first hurdle is mastered. This phase should sometimes be run against a sprinter.

(ii) Hurdling for technique over three feet six inches hurdles with the emphasis on an efficient and tidy clearance, and fast running between hurdles (speed is part of technique).

(*b*) *For the high hurdler and low hurdler.*

In addition:

(i) Stride 220 or 330 yards each work-out.

(ii) Gentle 75 yards sprint with exaggerated knee-lift.

(iii) Work at relay racing with the sprinters.

(*c*) *For the intermediate hurdler*

In addition to (*a*) and (*b*):

(i) Long, slow jogs once a week.

(ii) 880 yards striding at about half effort.

(iii) 660 yards at about three-quarter effort.

(iv) Slow mile run, alternate slow and fast laps.

124. An example of a high and low hurdler's weekly training programme (early season) is as follows:

(*a*) *Monday*

(i) Limbering-up.
(ii) Starts across the first hurdle against sprinters.
(iii) Run over three hurdles for technique.
(iv) Stride 220 yards flat; rest and repeat.
(v) Baton-changing practice. Limbering down.

(*b*) *Tuesday*

(i) Limbering-up.
(ii) Full speed over three hurdles from blocks (repetitions).
(iii) Stride 330 yards and repeat.
(iv) Jog one mile slowly on grass.
(v) 75 yards dash with emphasis on knees raising high.
(vi) Practise discus throwing or some other field event.
(vii) Limbering-down.

(*c*) *Wednesday*

(i) Limbering-up.
(ii) Starting practise with the sprinters; dashes up to 40 yards.
(iii) Work-out over five hurdles (repetitions); check on first hurdle approach, speed between hurdles.
(iv) Jog three-quarters of a mile and finish with 330 yards striding.
(v) Practise any field event.

(*d*) *Thursday*. As for Monday.

(*e*) *Friday*. Brisk walk for two to three miles.

125. An example of a high jumper's weekly training programme (mid-season) is as follows:

(*a*) *Monday*

(i) Limbering-up.
(ii) Rest.
(iii) Jumping practice at about five inches below the best height jumped, concentrating (at different times) on degree of acceleration in the approach, the timing of the backward lean on last stride and the co-ordination of leg and arm movements at the take-off.
(iv) A few minutes easy work over three low hurdles.
(v) Practise with the discus.
(vi) Stride 300 yards at about half effort; jog a lap.

(*b*) *Tuesday*

(i) Limbering-up.
(ii) Rest.
(iii) Practise jumping in a pit having a difficult background and approach surface, concentrating on points mentioned in (*a*) (iii) relaxation in the air, and for determination of the high point of the jump; check up on imprints of take-off foot on these jumps.
(iv) From starting blocks; starting-practice over 35 yards at full speed with the sprinters; perform a little low hurdle ' stepping '.

(v) Try a few standing putts with the shot, stressing the leg-drive.

(vi) Jog a lap.

(*c*) *Wednesday*

(i) Limbering-up.

(ii) Rest.

(iii) Work over three hurdles for speed.

(iv) Shot and discus practice for a few minutes.

(v) Make two starts over 50 yards and one over 70 yards at full effort with the sprinters.

(vi) Jog a lap.

(Note: no high jump practice on this day).

(*d*) *Thursday*

(i) Limbering-up.

(ii) Rest.

(iii) 15 minutes low hurdling (on grass) over three hurdles good style.

(iv) Jog a lap.

(*e*) *Friday*. Rest.

(*f*) *Saturday*. Competition or trial.

126. An example of a shot putter's weekly training programme (peak season) is as follows:

(*a*) *Monday*

(i) Limbering-up.

(ii) In this work-out, particular attention should be paid to any faults in technique noticed during the previous week's performances.

(iii) About 30 putts should be made finishing off with a few sprint starts, full-out, over about 60 yards.

(*b*) *Tuesday*

(i) Limbering-up.

(ii) Approximately 50 putts, working to the competition rhythm, concentrating on points of technique.

(iii) Low hurdling practice over three flights adjusting the hurdle-spacing to suit striding (seven strides between obstacles).

(iv) Finish off with 300 yards sprinting and striding.

(*c*) *Wednesday*

This should be the hardest day of the week.

(i) Limbering-up.

(ii) Make about 30 putts (still working for rhythm and style).

(iii) Work with the high jumpers for 15 minutes.

(iv) Return to the shot circle and complete a further 30 putts.

(v) Finish off with six sprint starts full out, over about 60 yards.

(*d*) *Thursday*

(i) Limbering-up.

(ii) Run over five flights of low hurdles three or four times.

(*e*) *Friday*. Rest.
(*f*) *Saturday*. Competition.

127. An example of a weekly training programme for long jumpers and hop, step and jump athletes (late season) is as follows:

(*a*) *Monday*
- (i) Limbering-up.
- (ii) Work over two or three low hurdles.
- (iii) Correction of long jump faults from the last competition with the assistance of the coach.

(*b*) *Tuesday*
- (i) Shot putting or discus throwing.
- (ii) Short dashes with the sprinters.
- (iii) Low hurdling practice.

(*c*) *Wednesday*

This is the heaviest days training (if still working on technique).
- (i) Jumping for style at slightly less than maximum effort.
- (ii) Two fast 220 yards.
- (iii) Practise a few sprint starts.

(*d*) *Thursday*. Sprint starts with 40 yard dashes.
(*e*) *Friday*. Rest.
(*f*) *Saturday*. Competition.

General notes

128. At the end of each week of training, the work should be reviewed and future training adjustments made if necessary. The following questionnaire will give a guide to the sort of questions an athlete or coach should ask himself:

(*a*) Was the warm-up sufficient and of the right type?
(*b*) Were the exercises too severe or too easy?
(*c*) Was there enough strength work?
(*d*) Was there enough speed-work?
(*e*) Are the training days too many?
(*f*) Was the training progression correct?
(*g*) How much technique was forgotten in the excitement of the competition, etc?

129—133. Reserved.

CHAPTER 5

Sprinting

Section 17: GENERAL

134. Sprints are defined as races on the flat in which the contestant runs at full speed over the entire distance.

135. Although almost everybody can run, it is another matter to run fast. A coach cannot literally make an athlete run faster, but he can

teach him the fundamentals and techniques; help him to eliminate faults and, with the right phsychological approach, develop his determination and natural will to win.

Qualities required

136. The essential qualities required in sprinting are as follows:

(*a*) *Speed.* Throughout the history of sprinting, champions have not been confined to one particular physical type, but irrespective of individual build, style and temperament, all have possessed natural speed. This is the basic physical qualification of the sprinter.

(*b*) *Reaction time.* This is the time taken for the muscles to respond to a given impulse, and to perform a voluntary action after conscious thought. Since many of the movements performed by a sprinter are of this nature, the correlation between good sprinting and reaction time is very great.

(*c*) *Reflex time.* This is the time taken for the muscles to respond to a given impulse and to perform an involuntary action without conscious thought. Many movements, particularly those made on the sound of a gun, are of this nature and consequently a fast reflex time is essential if a fast start is to be made.

(*d*) *Automatic action.* An athlete must be able to make all his movements the result of reflex. That means that they must be automatic and performed without conscious thought. This is brought about by training and the mastering of true technique.

(*e*) *Concentration.* This is the ability of the athlete to concentrate to such an extent that he is unaware of anything other than the fact that he is running in a race.

Section 18: STARTING

The crouch start

137. The advantages of the crouch start are:

(*a*) The centre of gravity of the body is in front of the feet, which allows for an almost direct forward movement to be made instantaneously.

(*b*) Correct positioning of the body creates correct muscle tension, thus making it possible for the muscles to work with the utmost efficiency.

(*c*) All levers act in planes parallel to the direction of starting.

138. There are three basic crouch starting or ' set ' positions.

(*a*) *The bullet position.* This is used mainly by the tall, strong shouldered athlete, who has the ability to overcome the inertia of his body with what is called ' leg speed ', i.e. the ability to move his legs quickly at the report of the gun. The advantages of this start are:

(i) Both feet are behind the centre of gravity of the body and are therefore able to give a more concerted and extended drive.

(ii) In the ' set ' position a considerable proportion of the body weight is carried by the arms and shoulders (Fig. 3).

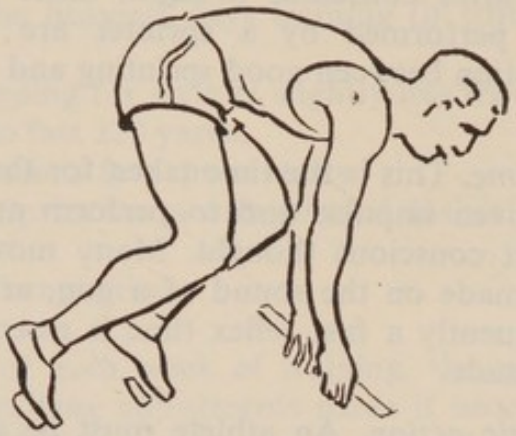


Fig. 3

(*b*) *Medium.* Not all sprinters are strong enough in the arms and shoulders to use the bullet style effectively. Consequently, the front leg has to be brought forwards to take more body-weight. The spacing between the feet is usually found by placing the knee of the rear leg next to the instep of the forward foot (Fig. 4).

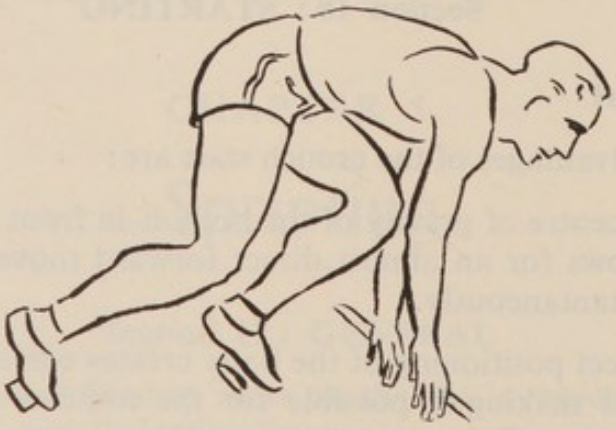


Fig. 4

(*c*) *Elongated.* There are occasions when an athlete has neither the ' leg speed ' or strength in the shoulders to use the bullet style, and at the same time finds the medium style unsuitable. In such cases, the forward foot is brought a little nearer the line and the knee of the rear foot taken just behind the opposite heel. This method is not usually so effective as either of the other starts.

139. Although there are three basic start positions as described above, two facts must always be remembered as follows:

(*a*) An athlete can use all three starts but with varying degrees of success.

(*b*) It is unlikely that any one athlete will be able to use a pure bullet, medium or enlongated position, and that the basic principle will have to be amended to suit the individual. An athlete may find that his best position is halfway between any two basic positions.

Factors governing the set position

140. There are six main factors which govern the set position:

(*a*) *Front leg bend.* The amount of drive that can be derived from the leg is, to a degree, governed by the amount of bend made by the leg. The ideal degree of leg-bend for maximum efficiency will be found when the knee is bent so that the angle between the lower leg and thigh is about 90 degrees. This degree of bend will obviously differ with each individual. Thus, in the crouch start, the distance of the front foot from the hands will govern the degree of leg bend.

(*b*) *Rear leg bend.* The amount of force given by the front leg varies slightly with the different starts and is affected very little by the spacing of the feet. The amount of force exerted by the rear leg is affected however, and is increased as the spacing between the front and back foot increases. Consequently, the amount of force exerted by the rear leg is greatest in the elongated style and least in the bullet. In the medium start, the drive is about equal with both legs.

(*c*) *Hip height.* In the set position the hips should not be below the line of the head. This is easily understood when it is remembered that one advantage of the set position is that the body-weight (centre of gravity) is in front of the feet, and that to attain this position the body must be moved forwards and upwards from the mark.

(*d*) *Forward inclination of the arms.* If, in assuming the set position, the body is moved forwards and upwards and the correct degree of leg-bend and hip-elevation is attained, the arms should be inclined forward to bring the point of the shoulders slightly in front of the hands.

(*e*) *Comfort.* This aspect can only be considered when the athlete is used to the position, because at first the novice will always find it a little awkward.

(*f*) *Drive*. Finally, the set position must be such that the initial drive can be made with both feet, the head is held in normal alignment with the body, and the arms are shoulder-width apart with the fingers forming a tripod.

The four point break (Fig. 5)

141. As the athlete starts moving at the sound of the gun, a definite sequence of movements are performed.

(*a*) The initial drive is started by the rear leg, and is followed very quickly by the drive of the front leg. For a while both legs drive simultaneously, but, of course, the front leg drive will continue after the rear leg has finished. As the legs drive, the shoulders will be raised above the height of the hips and both arms will start their running action. In the case of an athlete who has his left foot forward in the crouch start, the rear right leg is brought forward at the end of its drive, the knee being lifted vigorously forward and upwards. The backward drive of the front leg, plus the forward movement of the rear leg makes the right hip swing forward; this must be counterbalanced by the action of the arms.

(*b*) When the rear leg is brought forward, the foot must not reach forward in front of the knee, but must be driven down to the ground moving backwards so that it is below and behind the centre of gravity and drives the body forward immediately. This action is repeated by the front leg after it has completed its drive.

Fig. 5

Starting holes or blocks

142. The purpose of blocks and starting holes is to form a wall against which the feet can drive. The angle of the walls must be such that they allow the feet to act as naturally as possible and allow the legs to drive the body FORWARD and upwards. No definite angle can be laid down since it will differ with each individual and the most suitable angle must be found by experiment. As a guide, the rear wall of the front hole or block will be about 45 degrees and the wall of the rear one 80 or 90.

Concentration and reflex

143. After the command ' set ', the athlete should focus his attention on starting and NOT on the gun. He will then get an automatic reflex action. It must be remembered that the attention or concentration must be such that he is not conscious of anything other than the fact that the

gun will start him moving. Starting-training with the pistol will develop an automatic movement from the blocks. The greater this training, the more reflexive this movement will become. Verbal starting during training is a poor substitute for the pistol.

Section 19: THE PHASES OF A SPRINT

Analysis of sprinting

144. A sprint race may be divided into several stages: (*a*) the start; (*b*) transitional stage; (*c*) full speed; (*d*) cruising (coasting); (*e*) the finish.

These stages are explained in the following paragraphs.

The start

145. The start can be said to consist of the 'crouch' itself, the 'break from the blocks' and all actions up to the completion of the first two strides.

The main point to be remembered is that during these first two strides, great force must be applied by both legs, and the arm action must be perfectly co-ordinated with the legs and the rest of the body.

Transitional stage

146. This is the section of the race when the athlete is changing his action from starting to sprinting. Because it is impossible to run with the body at the low starting-angle, the body must be brought up gradually. This takes from 10 to 15 yards. The characteristics in this stage are a gradual lengthening of the stride and a progressive decrease in knee bend of the driving leg.

Full speed

147.(*a*) Sprinting position is adopted at the end of the transitional period, but full speed is not achieved until 50 or 60 yards have been covered. Basically, there are two styles of sprinting: Firstly, there is the style in which the trunk is carried with a slightly forward lean: secondly, the style in which the trunk is carried upright. It must be clearly understood that these styles are the product of the athlete's natural aptitude, and not so much the result of training. The position of the body in relation to the legs is dependent upon the flexibility of the hips. These two body positions tend to create two different styles of sprinting.

(i) *The driver* (*impact*) *style.* The carriage of the body with a distinct body-lean is known as the driver or impact style. 'Driver' because the forward lean of the body brings the recovery leg to the ground directly below the centre of gravity, with the result that it starts almost immediately the driving-phase of the leg action. 'impact' because of the accent given to the downward drive of the recovery leg in the final stages of the recovery action.

(ii) *The floater (pendulum) style.* In this style the suppleness of the pelvic region allows the trunk to be carried in a more upright position. While the driving-phase must still be maintained, it is not so prominent to the eye, and the result is that the body seems to 'float' along and the legs to work in 'pendulum' fashion beneath it.

(*b*) No matter what body position is adopted, the principle of leg action is basically the same. The drive must go through the centre of gravity in as near horizontal direction as possible although a slight upward 'bound' is unavoidable.

(*c*) There are three definite phases in the leg action. (i) Drive (Fig. 6); (ii) recovery (Fig. 7); (iii) support (Fig. 8).

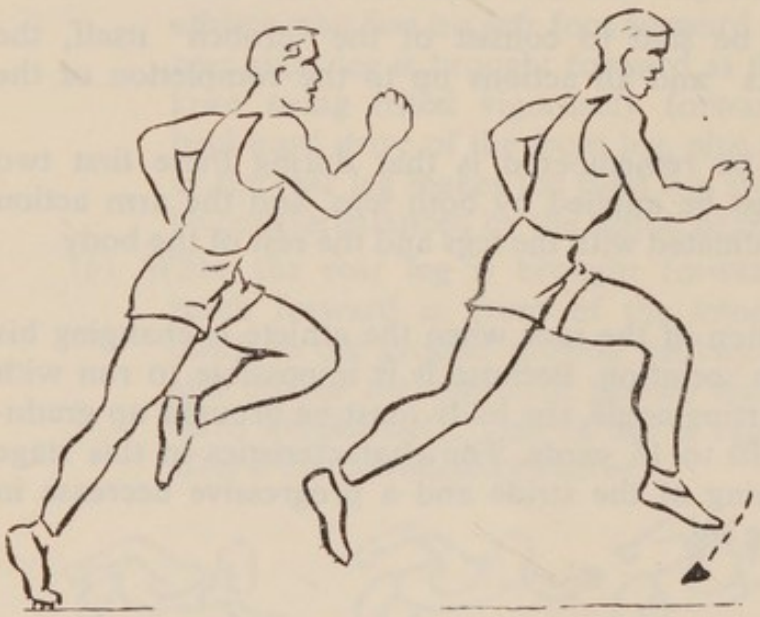


Fig. 6

Fig. 7

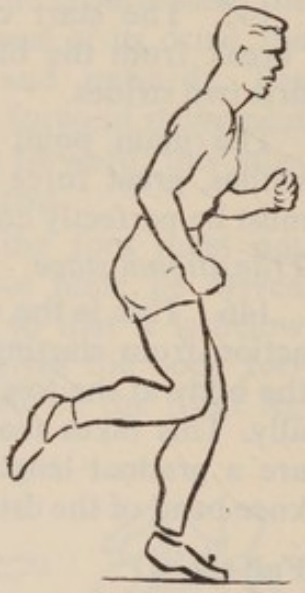


Fig. 8

(*d*) In all strides, as the right leg is pushed backwards and the left leg is swung forwards, there is a tendency for the reaction to twist the trunk to the right, this must be balanced by opposition control, i.e. left arm moving back and right arm moving forwards.

Cruising

148.(*a*) Cruising or as it is often, though rather misleadingly, called 'coasting' is the maintenance of the speed attained without effort being made to increase it. Naturally this is hardly possible when considered in relation to the 100 yards, but cruising plays a very important part during a race of 220 yards, 440 yards, etc.

(*b*) Cruising is more mental than physical in origin, but the muscle relaxation which results will prevent the athlete from striving to run faster and faster, while he is in fact running slower and slower, and 'tying up' at the finish, because of the great muscle tension.

The finish

149. The principle of the ' follow through ' must be applied. Many races have been lost because the athlete, thinking of the race finishing at the tape, has slowed down too soon. Athletes should be trained to run 10 yards beyond the tape, and to maintain good style and technique all the way.

Section 20 : COMMON TECHNIQUE FAULTS

Common technique faults

150. The distance of blocks from the start-line should be checked.

(*a*) If they are too near, ' folding-up ' of various parts of the body will be caused.

(*b*) If they are too far away, the thighs and legs are too straight for maximum drive to be obtained.

151. If the arms are too wide-spread, the chest will be brough on to the leading thigh thereby causing cramp.

152. Extreme lateral spacing of the blocks will cause an athlete to ' break ' with a twisting motion. The recommended distance is approximately eight inches between the centres of the heels.

153. The position of the hips requires careful attention.

(*a*) Too high an elevation will straighten the legs.

(*b*) Too little elevation will cause the initial movements to be upwards rather than forwards.

154. Arms and legs must co-ordinate on breaking. A novice's movement should be checked for ' same arm as leg ' action on the first pace.

155. The body should create its own angle, as the natural function. Coaches must check for artificial leaning either way.

156—160. Reserved.

CHAPTER 6

Middle Distance Running

Section 21 : GENERAL

Physical type

161. Generally speaking, there are two main types of athletes specializing in middle distance running.

(*a*) The tall athlete who has quite an amount of speed and natural ability.

(*b*) The strong, well-built type, who faces any distance with determination, but little style or technique.

Ideally, the 440 yards and 880 yards men must have a combination of the sprinter's speed and endurance akin to that required by distance runners.

Economy of effort

162. Whichever style the runner adopts, he must have the ability to synchronize his arms and legs into a smooth, rhythmical action.

Distribution of effort

163. The runner must know how to distribute his effort over the entire distance. He must understand pace judgement, so that he can cover each lap or part-lap at a near even-time. He must be able to apply pace-judgement to his knowledge of the abilities and styles of his opponents.

Subconscious effort

164. Hard training will develop the ability to run almost automatically at a given pace, which is varied only on occasions because of the action of an opponent. In this pamphlet, the speed at which an athlete knows he can run a race without undue fatigue is referred to as ' pace '.

Section 22 : TECHNIQUE

Style

165.(*a*) There are two main styles, the main difference being that in one style the heel of the leading foot contacts the ground first, while in the other the ball of the foot contacts it first.

(*b*) In the former style there is a very close relation to distance running style and it is seldom used for any distance under 880 yards. Because of this, it is dealt with more fully under the heading of distance running.

(*c*) The second style, when the ball of the foot contacts the ground first, is the generally accepted style for all middle-distance races.

Starting

166. Because of the close similarity to sprinting, the crouch start is used and all that has been said concerning the start and transitional strides for sprinting (sections 18—20) applies equally to middle distance running.

Full speed stride

167. Differences are found in the full speed strides and they are listed as follows:

(*a*) The cadence is slower.

(*b*) Effort must be made to maintain stride-length, which is usually slightly shorter than sprinting.

(*c*) The trunk is carried more upright; the accepted forward inclination of the body is about 85 degrees to the horizontal, as opposed to 75 degrees in sprinting.

(*d*) As in sprinting, the leg action may be one of two styles. Usually, however, the ' pendulum ' style, which necessitates a four-phase leg-action is favoured.

(*e*) The knee-lift is less pronounced, and the extension of the driving-leg is not so great.

(*f*) The arm-action is much easier and the hands are carried lower. The shoulder girdle is allowed more freedom of movement.

(*g*) The ball of the foot of the leading leg contacts the ground first and, as the result of the easier action, the heel sinks either on to or close to the ground as the body passes over during the supporting phase.

Section 23: ANALYSIS OF A RACE

Phases

168. For simplicity, the race can be split into three stages, namely: (*a*) Start; (*b*) body of the race; (*c*) finish.

Start

169. Most of the points affecting the start have been covered in the chapter on sprinting, but it is important to remember the maxim, 'position is everything'. Far too many runners start too slowly and try to speed up as the race progresses. This makes it too easy for opponents to fight off a challenge and either forces the athlete to run too fast, or at an uneven speed.

Body of the race

170.(*a*) So much affects this part of a race, both in the 440 yards and the 880 yards, that it is not possible to lay down any hard and fast rules. Ideally, the athlete should run to a definite, pre-determined plan, with the emphasis on distribution of effort. Since it is not possible for a runner to traverse either 440 yards or 880 yards with continued output of full effort over the whole distance, it is necessary to 'cruise'. The timing of the 'cruising phase' will depend upon the fundamentals of the race, but it should normally start at about the 110 yards mark in the 440 yards and at the 220 yards mark in the 880 yards.

(*b*) When the back-straight is reached, there is usually ample opportunity to study the opposing runners, but the golden rule is for an athlete to stay close to the leaders; no further back than 3rd.

Finish

171.(*a*) As opposed to the sprints, the finish in middle distance races is a case of holding-on. Very seldom is there any great increase in actual speed. It can be said that in the 440 yards, the last 110 yards is covered at something less than pace and in the 880 yards at about pace.

(*b*) The finish is sometimes said to be that part at the end of the race which is covered flat out. This can be misleading, as the effort which wins the race may be made quite early, and the actual last phase is only a case of holding on. The governing factor is that a burst of speed must be made to pass other runners, and still leave a sufficient reserve of speed to hold off any challenge. Consequently, the amount of reserve governs the timing and position of the sprint into the lead. Concentration should be on relaxation and on quickness of action, rather than increase of stride-length. This acceleration is very limited in duration and must come before fatigue sets in, otherwise the effort to accelerate when tired will result in complete exhaustion and consequent loss of style and technique.

Section 24: FUNDAMENTAL TACTICS

Effort

172. As already stated, the ideal plan is for an even distribution of effort, which produces a better time over the distance than the opposing runners can achieve. This is seldom attained however, and a middle distance man should always know the styles and capabilities of his opponents almost as well as his own.

Opponents' styles

173. Some of the points which an athlete should know concerning an opponent are listed as follows:

(*a*) How far does he sprint at the start?
(*b*) Does he run better in front or behind?
(*c*) What is his response to a challenge?
(*d*) What are his tactics and capabilities at the finish?

174. Assuming that an opponent's ability is about the same as an athlete's own, there must be a limit to the distance that he may let the opponent lead. In the quarter-mile this danger mark is about six or seven yards, and in the half-mile about 12 to 15 yards. Any lead greater than this means that it is doubtful whether the opponent will be overtaken.

Position

175.(*a*) Every runner has a position at which he can run to the best of his ability. Generally speaking, this is in the first three. Obviously, every runner in the race cannot obtain this position, and, in consequence, there is always a fight to obtain and hold it. Assuming that a runner has obtained the desired position, the main fact to be remembered is that he should never fall in directly behind a leader if there is a possibility of runners coming up from behind who will box him in. He should run at the right shoulder of the leader which will mean running a little further, but is better than the loss resulting from being forced to drop out of the 'box' and running round outside the pack to regain the lead.

(*b*) Passing and being passed are also problems to be considered by middle distance runners. The real question can only be answered at the actual time, the stage of the race, relative positions, speed, tactics, etc. all being considered. Normally, the plan should be to fight off a challenge made on the curve, as this will cause an opponent to run a greater distance. At all times, other than at the end of the race, an opponent should not be allowed to force a speed which an athlete knows is far above his ability.

If there are any ' race away types ' in the race, they should be allowed to go on ahead. They will soon tire and be overtaken.

Maintenance of stride

176. It is important that stride-length is held as constant as possible. Uneven running adds great strain and causes fatigue which is often unnecessary and premature. Sometimes it is good policy to run wide of opponents who run unevenly.

Finishing

177. Many people consider that the end of a race only consists of the final burst to the tape. In fact, this is usually what inexperienced runners do. In the sprints and at least the shorter middle distance races, the finish is carried out at about pace, or perhaps a little less. This can be easily understood, when the speed at which the whole of the race is covered is taken into consideration. Of course, there must come a time of acceleration when a particular runner wishes to take the lead to be first home, but the actual time and place at which this acceleration takes place depends upon two things apart from the opposition. The first is the actual running position and the second the runner's ability to hold on. As already explained, the finish invariably rests on this ability. Some athletes have enough reserve at the end of the race to take the lead early on the last bend and can then maintain that lead ' home ' without any great acceleration after the burst which took the lead. Others have to wait longer and make their bid nearer to the tape. This type of finish is the generally accepted style.

178—182. Reserved.

CHAPTER 7

Distance Running

Section 25 : GENERAL

Physical type

183. Little can be said on this subject because a study of champions shows that success has been attained by athletes of very varied physiques.

Age seems to play its part in this event. Athletes in the one mile and two miles events attain their peak at about 20 to 25 years of age, while

with longer distances, the peak seldom comes before 25 years of age and often considerably later in life. It is not considered advisable for young athletes to try the longer distances because of the great strain placed upon the body.

184. In this event speed must be combined with stamina, stride, pace, wind, determination and adaptability.

Section 26: ANALYSIS OF RACE AND TACTICS

185. **Start and transitional stages**

These are similar to the corresponding phases of middle distance running (Section 22), with the exception that over the longer distances the crouch start is seldom used, though it will be found advantagous to the runner who likes to lead at the first bend.

186. **Full speed stride**

(*a*) As in middle distance running there are two main styles. The Finnish style is that in which the ball of the foot contacts the ground first, and as the heel sinks to the ground the body-weight is carried over the foot. This movement is completed by a rock-up on to the toe as the drive is executed. The drive is accompanied by a knee-lift of the free leg. The carriage is almost upright, and forward inclination of the trunk is reduced to about 85 degrees. The Finns invariably seem to carry the trunk completely upright because they hold the shoulders back and throw out the chest to aid breathing. The arms are held at waist height and, while the fixation of the shoulder girdle is less than in the shorter distances, they must not be allowed to swing freely from side to side (Fig. 9).

Fig. 9

(*b*) The alternative style of running really only differs in one respect. The heel of the leading foot contacts the ground first and a full rock-over on the ball of the foot is performed. This style has the advantage of distributing the work amongst the leg muscles and allowing the driving muscles a little more relaxation.

(*c*) No matter what style is used the ideal stride is maximum length (this is shorter than in sprints and middle distance running) combined with maximum relaxation.

Cruising (coasting)

187. Unlike the shorter distances, cruising is not confined to any particular part of the race. The athlete must use his discretion; he may find that he will have to cruise at various intervals as opposed to restricting it to one limited distance.

Finish

188. Once again, this is generally the same as in middle distance running. There are two styles. The ' holding on ' which resembles something of a shock tactic, where the runner has gained a substantial lead quite early in the race and then has enough stamina to hold his advantage. Then there is the sprint finish which is more generally used. The danger here is that the final sprint may be made too soon. Seldom is it prudent to try to make this sprint over more than 150 yards.

Fundamental tactics

189.(*a*) An athlete must run to pace.

(*b*) Position (factors such as those given in section 24 must be considered).

(*c*) Capabilities of opponents must be considered.

(*d*) Stride must be maintained.

(*e*) If safe to do so, an athlete should try to run directly behind the leader (in the second lane, about 18 yards more has to be covered in every 440 yards).

(*f*) The dangers of being ' boxed ' in is less important because of the greater distances concerned.

(*g*) Speed should be slightly increased when being passed, but every challenge should not be accepted.

(*h*) Passing should be done quickly, not by a mere increase of stride length.

(*j*) Long striding, unless perfectly natural, is inadvisable.

(*k*) Slight changes in style during a race over long distances relieves tired muscles.

(*l*) One mile and two mile races are run at about same pace.

(*m*) The ' danger line ' for the one mile is 25 to 30 yards. For two miles 40 to 50 yards. This is flexible but it should be remembered that the greater the lead, the greater the danger.

(*n*) The longer the race, the more important becomes distribution of effort, and economy of running.

(*o*) In the one mile, the second 880 yards should be faster than the first 880 yards, with the first and last laps being the fastest.

190—194. Reserved.

CHAPTER 8

Relay Racing

Section 27 : GENERAL

195. Relay racing is an event where a number of runners cover a certain distance, relieving each other at some point within a specified area or zone.

196. The popularity of this type of event is indicated by the fact that it is included in almost every athletic meeting. Relays allow for a large number of competitors to participate as opposed to only the individual, and the variety of distances covered allows participation by almost every type of athlete.

197. Originally, an athlete would start to run his leg of the race on a ' hand touch ' from his in-running partner. This led to great discrepancies in judging, and resulted in the introduction of the baton. This introduction produced something of a hazard and led to the evolution of many and varied types of baton changes.

198. Because of the fact that relay racing consists of sprinting, middle distance and distance running, instructors and athletes should be well informed in these events before dealing with baton exchanges.

Section 28 : EXCHANGING THE BATON

Definition of a baton exchange

199.(*a*) The baton must be passed from one runner to another while both are within a twenty-two yard zone. The outgoing or receiving runner must start his run from inside this zone.

(*b*) The baton must be passed from hand to hand and not thrown or dropped to be picked up by the receiver.

Types of exchange

200. There are two types of exchange, visual and non-visual. They are governed by the action of the head and the eyes of the receiver, or outgoing runner.

201. *Visual*

(*a*) This type of exchange is generally used in the middle and longer distance legs of a relay race and is so called because the receiver (outgoing runner) turns his head and eyes and watches the progress of the baton before and during the crucial moment of the exchange. This type of exchange is usually demanded by the fact that the incoming runner is inclined to be suffering from fatigue and is not able to carry out the responsibility with complete efficiency. The receiver therefore, being fresh, must carry the onus of the change and ensure that he receives the baton. Because

of the fatigue of the incoming runner, the actual exchange must take place early in the zone.

(*b*) Although the receiver has to turn to watch the baton this does not mean that he must stand still. On the contrary, he must have started to run before the incoming runner reaches him, and it is his responsibility that the speeds of the two coincide at the moment of exchange.

202. *Non-visual*

As the name implies, this type of exchange is the reverse of the visual type. It is used mostly for the shorter distance sprint relays, when speed is even more essential than in the longer distances. Because of the comparatively short distance covered, the incoming runner is able to carry the responsibility of the change. In addition, because of the relatively short distances concerned, the receiver must be moving at something very near to his top speed at the moment he receives the baton. To put these facts into effect, a system of check marks is used.

(*a*) The receiver stands near the second check mark which is represented by the first restraining-line of the exchange zone.

(*b*) He starts to run with correct sprinting technique when his partner (the incoming runner) reaches check-mark number one which is some pre-determined distance from the zone. It is so placed that by carrying out the above procedure, the speeds of the two runners merge as the receiver reaches check mark number three which will be five or six yards away from the last restraining line of the zone.

(*c*) When this point is reached, the exchange takes place by the incoming runner placing the baton into the hand of the receiver.

NOTE. No attempt should be made to run with the hands out-stretched anticipating the exchange, as this will cause loss of oppositional control and consequently a reduction of speed.

The fewer the number of strides taken during the actual exchange, the better.

Methods of exchange

203. There are very many methods of exchange, but no matter which one is adopted, there are two factors that must be taken into consideration, as they govern all other points.

(*a*) *Safety*. This is so obviously an essential of relay racing, that all that needs to be said is that no baton exchange method must ever be used which is not as secure as possible.

(*b*) *Free distance*. This is the distance between the two runners at the moment the baton actually changes hands. The important thing to remember is that it is the speed of the baton around the track that counts. Since the baton cannot be thrown, the greater this free distance, the better.

204. Of the many methods of exchanging the baton, one of five methods is generally used. Each of these methods is defined by two actions.

(*a*) The arm action of the receiver, or the actual position of his hand.

(*b*) The action of the incoming runner to place the baton into his partner's hand.

205. **First method:** *Target* (*I*) (Fig. 10)

(*a*) The receiver places the fingers of his right hand on his hip, with the thumb to the front and the elbow bowed outwards forming a loop or target into which the passer can aim the baton.

(*b*) The baton, having reached the target, is placed into the receiver's hand with a downward movement of the arm by the passer.

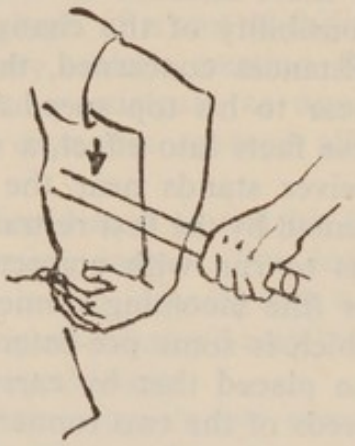


Fig. 10

206. **Second method:** *Target* (*II*) (Fig. 11)

(*a*) The receiver places the thumb of the right hand against his hip, thus forming a small, but steady target with the fingers, which are extended downwards and outwards. The elbow is directed to the rear.

(*b*) The baton is placed into the hand by the passer, by an awkward sweep of the left arm at the end of the normal forward swing.

NOTE. Both of these methods give maximum safety but nearly minimum free distance.

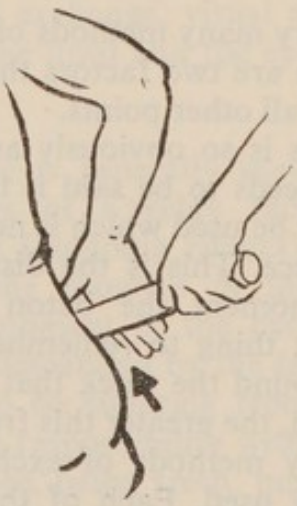


Fig. 11

207. **Third method:** *Straight arm* (*I*) (Fig. 12)

(*a*) The right arm of the receiver is fully extended to the rear a little below shoulder level. The elbow and palm are facing upwards with the thumb directed to the left or towards the body.

(*b*) This requires a downward sweep of the baton by the passer, who endeavours to make this movement with the left arm so that it is timed with the forward movement of the right leg (oppositional control).

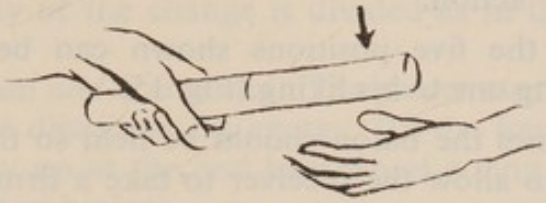


Fig. 12

208. **Fourth method:** *Straight arm* (*II*) (Fig. 13)

(*a*) The arm is extended to the rear with the palm facing upwards and perhaps a little outwards. The elbow faces downwards with the thumb pointing directly to the rear (in some cases the arm may be held a little to the right). The hand should be held just above the line of the hips.

(*b*) The exchange is made by downward sweep of the arm of the passer and is very similar to that of the third method.

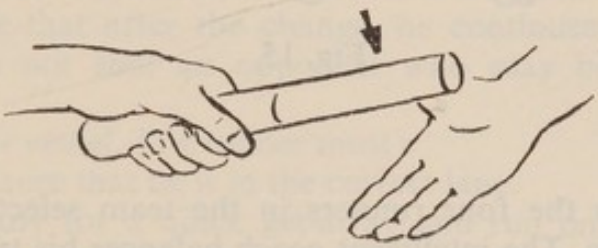


Fig. 13

209. **Fifth method:** *Straight arm* (*III*) (Fig. 14)

(*a*) The receiver extends his arm to the rear so that the hand is about level with the hips or a little lower. The palm is to the rear with the thumb down.

(*b*) The baton is passed with an upward movement by the incoming runner.

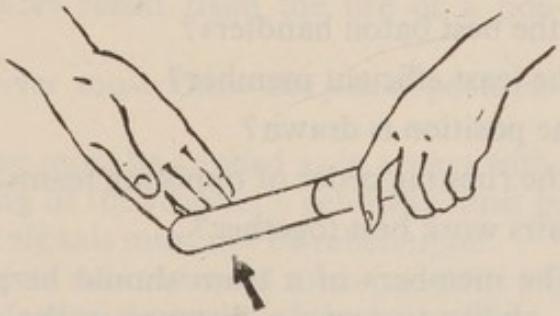


Fig. 14

Section 29 : THE START, RUNNING ORDER AND RESPONSIBILITIES OF RUNNERS

Baton hold at the start

210.(*a*) The baton is held in the left hand so that it is ready for the passing action. The important points to remember are:

(i) Safety.

(ii) The position of the baton must not retard the starting action.

(*b*) Any of the five positions shown can be used, the athlete choosing one to his liking (Fig. 15).

(*c*) At all times the baton should be held so that there is enough room to allow the receiver to take a firm grasp. During the actual change, this is performed by the passer placing his hand close to that of the receiver. As soon as the receiver has the baton, he must change it into his left hand ready for the next pass. Failure to do this immediately may result in it being forgotten, or loss of running style.

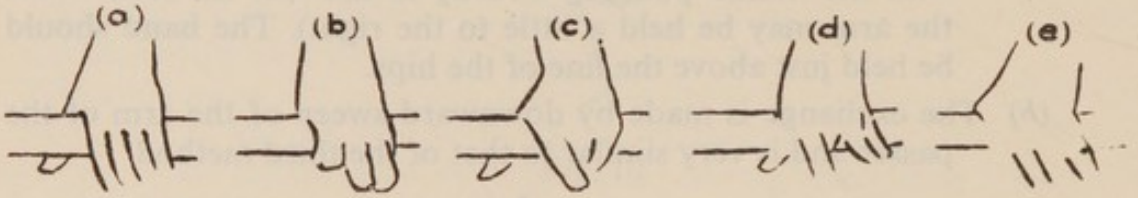


Fig. 15

Running order

211. Too often the four runners in the team select their order of running at random. The intelligent coach balances his team and decides on a running order based on efficient handling and running ability.

Some of the points to be considered are:

(*a*) Length of race.

(*b*) Does a member of the team run best when behind?

(*c*) Does a member of the team run best when in front?

(*d*) Who is the fastest or best starter?

(*e*) Is the athlete cool headed?

(*f*) Who are the best baton handlers?

(*g*) Who is the least efficient member?

(*h*) What lane position is drawn?

(*j*) What is the running order of opposing teams?

(*k*) Which pairs work best together?

(i) The members of a team should be placed in order of ability to cover a distance in the shortest time, and designated 1, 2, 3, 4.

(ii) This order may be changed to fit the prevailing circumstances, but very seldom does No. 1 run either the second or third leg. He is usually either first in the hope of building a lead, or last in order to make up ground lost.

Responsibility during the pass

212. A good pass is said to take place when, at the moment of exchange, both runners are moving at the same speed. This speed should be the optimum of each.

The responsibility of the change is divided as in the following paragraphs:

213. *Passer* (*visual and non visual*). The passer must:

(*a*) Judge and distribute his energy. (In the longer races, he must not slow up at the end because of trying to run too fast at the start of his leg).

(*b*) Know where his team-mate is standing so that he can make straight for him, thus avoiding confusion.

(*c*) Know the position of his opponents.

(*d*) Time the extension of his baton-arm to coincide with the arm of his partner so that there is no loss of oppositional control.

(*e*) Ensure that when his arm is extended, it synchronizes with his leg action.

(*f*) Allow enough baton for the receiver to grip.

(*g*) Apply the correct pressure to the baton and retain his grip until he is sure that it has been well-taken.

(*h*) Ensure that after the change, he continues to the front and does not foul an opponent who may be running behind him.

214. *Receiver visual*. The runner must:

(*a*) Make sure that he is in the correct lane.

(*b*) Be ready for a quick get-away and run on the inside of the lane.

(*c*) Judge the speed of the incoming runner (practise running with his head turned).

(*d*) Judge the degree of fatigue of the incoming runner.

(*e*) Time his start correctly through judgement of his partner and opponents.

(*f*) Ensure that his hand goes into the correct position.

(*g*) Transfer baton to left hand.

215. *Receiver* (*non-visual*). In addition to the duties listed for the visual method, others result from the use of a non-visual method as follows:

(*a*) The receiver must know the exact position of the restraining lines.

(*b*) Foot-drive must be applied as in a start with a gun.

(*c*) The timing of the receiver's get-away must be correctly judged. Verbal signals must not be relied upon.

(*d*) The receiver must be used to running for two or three seconds before feeling the touch of the baton.

216—220. Reserved.

CHAPTER 9

Hurdling

Section 30 : GENERAL

221. At one time, hurdling was more spectacular than technical. Today however, hurdling is sprinting, and any factor that detracts from speed is a fault. Bearing in mind that the true hurdling position is sprinting technique over a barrier, certain physical and mental qualities are essential, if a potential hurdler is to be successful.

222. Hurdle races are divided into three main categories :

(i) 120 yards high hurdles (essentially sprint event).

(ii) 220 yards low hurdles (essentially sprint event).

(iii) 440 yards intermediate hurdles (middle distance event).

Section 31 : HIGH HURDLES (120 YARDS)

Physical type

223.(*a*) Length of leg. This essential factor eliminates the necessity of ' jumping ' the barriers.

(*b*) Hurdlers are usually found among the loose-limbed, long-muscled type of athlete as opposed to the stocky type. The main essential in this respect is suppleness in the pelvic girdle. This must either be a natural quality or the product of hard specialised training.

(*c*) The high hurdles is a sprint event and the hurdles are cleared by a modified stride and not a jump. The hurdler must be a sprinter in every respect.

(*d*) Co-ordination and rhythm must be developed to a very high level, and combined with a considerable degree of courage.

Technique

224. The phases into which hurdling may be divided are: (*a*) The start; (*b*) Stride pattern to the first hurdle; (*c*) Hurdle clearance; (*d*) Strides between the hurdles; (*e*) The finish.

Start

225. All that has been said in section 18, concerning the start of a normal sprint race applies equally to hurdling. However, when applied to hurdling, there are certain factors that must be considered and certain modification made.

(*a*) The sprint to the first hurdle is one of the main factors governing the speed at which the whole race is run. An athlete must accelerate to his maximum speed (consistent with good hurdle-clearance technique) before he reaches the first hurdle. During the strides between hurdles, little or no acceleration can be obtained, the emphasis being on hurdle-clearance and maintenance of speed built-up at the start.

(*b*) The distance to the first hurdle is 15 yards and is covered by either seven or eight strides. This will mean that, if the athlete is going to lead with the same leg over the hurdles every time he races, as he must, it is necessary to have a definite stride pattern and he may have to change his dominant leg in the crouch-start position.

(*c*) The 15 yards to the first hurdle also means that the athlete has to attain his sprinting-angle slightly sooner than he does in a normal sprint race, in order that he is in a good position to take off for the first hurdle. This can be attained usually in one of the following ways, or in a combination of both.

Stride pattern

226.(*a*) Most hurdlers cover the distance to the first hurdle with eight strides which means that the athlete will lead over the hurdle with the leg which is to the rear in his crouch start.

(*b*) Hurdlers with above average leg-length, who take only seven strides to cover the 15 yards do not have to change their leg position in the ' set ' if they wish to lead over the hurdle with the forward (dominant) leg in the crouch start.

(*c*) It must be remembered that the distance available is not the full 15 yards, as the take-off will be at least seven or eight feet from the hurdle. The stride is gradually increased in length and the good hurdler must react accordingly.

(*d*) There is very little difference between the seven and eight-stride plan, though the hurdler using eight strides may gain momentum faster.

Hurdle clearance

227.(*a*) At the other end of the last stride to the hurdle, the runner lifts the leading knee and then extends the leg just high enough to clear the top bar of the hurdle. The trunk is bent forwards parallel with the thigh of this leg. The take-off foot has been fully extended and is not brought forwards too soon.

(*b*) The leading arm is thrust forward parallel to the leading leg and the other arm brought back bent. Generally, the hand of this arm does not move behind the line of the hips, particularly with the tall athlete, but the shorter performer may have to move it through a greater range. The action of both arms is slightly fiercer than in normal sprinting (*see* Fig. 16).

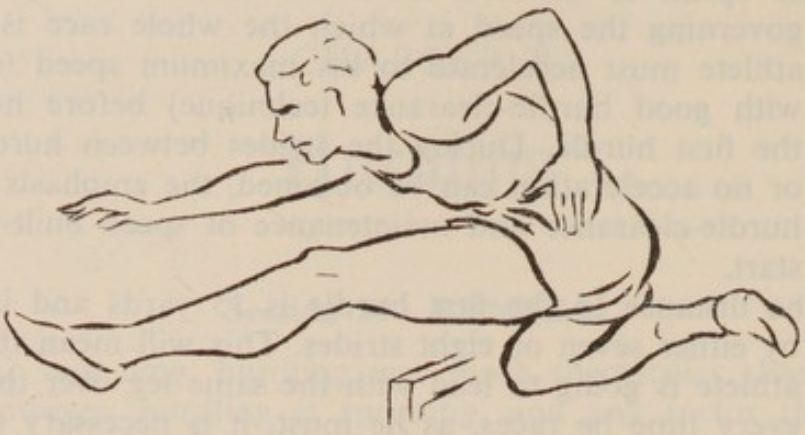


Fig. 16

(*c*) When the leading foot is about 12 inches over the hurdle, it starts a hard 'cut-down' action over the hurdle to the ground. This is important, as the longer the flight, the greater is the decrease in speed. As this cut-down action begins, the body must have reached the limit of its forward inclination and must be parallel to the thigh with the chin at least over the knee.

(*d*) Co-ordinated with this 'cut-down', the trailing-leg is flexed and brought sideways over the hurdle and forwards to a knee-lift position in front, ready for the first stride on landing (*see* Fig. 17).

Fig. 17

(*e*) The leading leg is deliberately forced down to the ground so that it lands on the ground moving backwards and does not cause a check to the forward speed. This foot contacts the ground directly under, or very slightly behind, the centre of gravity of the hurdler.

(*f*) The trunk angle must be returned to normal on landing so that the greatest speed may be attained before the next hurdle is reached.

(*g*) As the leading foot cuts down, the leading arm is swung backwards and downwards, clear of the rear leg, which is moving forwards and upwards. The opposite arm comes forwards with normal oppositional control. Thus on landing, normal sprinting technique is assumed.

(*h*) The object is to land as close to the hurdle as possible (about four to five feet from it) so that the overall flight is normally between 11 and 12 feet.

Strides between hurdles

228.(*a*) The thirty feet between each hurdle is covered by three strides. Stride-length is the all-important factor. If the hurdler takes 12 feet for clearance action, then he has 18 feet to travel. This usually is spaced out as follows; the first stride is the shortest (about five feet five inches) the third, the longest (about six feet five inches), leaving six feet two inches for the second stride. Of course, this will vary with individuals, but it forms a basis upon which potential hurdlers can work. An even cadence for these strides is even more important than their length, though great care should be given to the first of the three. If this stride is too long, then momentum will be lost. (For the same reason a sprinter regulates his stride length for the first few yards after the start).

(*b*) This stride must not be cut-down too short, or the hurdler will find that he has too much ground to cover with the next two strides.

(*c*) The speed on landing from each hurdle is very slightly less than that at take-off and it is during the three strides between each hurdle that some acceleration must take place to maintain the speed built-up before the first hurdle. Obviously this cannot be done during the hurdle-clearance because the resistance from the ground has been lost.

Finish

229. Once again, all that concerns normal sprint finishes applies here. The hurdler must maintain good technique over the last hurdle so that he can quickly attain good sprinting form for the run-in.

Section 32 : LOW HURDLES (220 YARDS)

Start

230. Like the high hurdles, this is essentially a sprint race and usually the low hurdler will also specialize in the 220 yards. Because of the similarity, all the points concerning the start of sprints apply to this event (*see* section 18).

231. The stride pattern to the first hurdle must have the same considerations as in the high hurdles. These are the main differences in technique :

(*a*) The number of strides is greater because of the added distance; either 10 or 11 strides are used. As in the high hurdles, the ' dominant ' leg position may have to be changed to allow the runner to lead over the hurdles with the desired leg.

(*b*) Because of the greater distance, the attaining of the sprint body-angle does not have to be hastened and the sprinter will find the first few yards very much akin to his normal 220 yards technique. Since the obstacle is so much lower (two feet six inches only) there need not be so great a concentration for take-off as in the 120 yards race. Consequently, the hurdle may be approached at a greater speed. Another contributory factor is the increased distance to the first hurdle.

Hurdle clearance

232.(*a*) The take-off will average between seven feet six inches and eight feet away from the hurdle and the landing about four feet six inches. The actual clearance-action very closely resembles that required for high hurdles, but because of the decreased height, less emphasis is given to the trunk-lean and knee-lift at the take-off.

(*b*) Whilst is is a mistake to allow the athlete to jump over the obstacle, it may be equally erroneus to make him go down to the hurdle, because he will then have to come up again on landing.

A synchronized step over the hurdle is the aim, with no loss of speed or rythm.

(*c*) The arms also require less emphasis; so long as the initial forward thrust of the free arm is made to aid the leading leg, and provided that the arms do not perform some grave mechanical error, their main function is to balance the body during clearance, and to assume normal oppositional control on the flat.

(*d*) The cut-down starts when the leading foot is about 15 inches past the hurdle, and the relation of this foot to the body is then the same as in the high hurdles.

Strides between hurdles

233.(*a*) A definite number of strides to be taken cannot be laid down because of the many factors that have to be taken into consideration. It is reasonable to assume however that it will be either seven, eight or nine strides. If the athlete takes eight strides, he will have to take-off for each hurdle from alternate feet and, in consequence, great attention must be paid to this in training. While the long-legged athlete may adopt the seven stride plan, the stocky, short-legged man will undoubtedly use the nine stride plan.

(*b*) The cadence of the strides, irrespective of their number, must resemble that of the three-stride pattern used in the high hurdles.

(*c*) It is possible that the hurdler may have to change his stride pattern during the actual race. For example, a strong wind over the last part of the race may force the runner to change from a seven to a nine stride pattern after the sixth or so hurdle.

(*d*) Trial and error is the only way to decide which pattern an athlete should use, but it must always be kept in mind that the object is to sprint, and everything must work towards this end. A seven-pace stride plan is the ideal and the other types are not usually as effective.

Finish

234. The main error is for an athlete to anticipate the sprint to the tape and forsake his technique over the last hurdle. This may mean hitting the hurdle or losing rhythm which will have drastic results. The athlete should not attempt to move into his full sprinting technique until he has landed from the last hurdle.

Section 33 : INTERMEDIATE HURDLES (440 YARDS)

Physical type

235.(*a*) This is a rather complex event because of the qualities required. To be successful, the 440 yards hurdler must have : (i) The speed of a sprinter; (ii) the endurance of a half-miler; (iii) the form of a high hurdler; (iv) the relaxation of a distance runner; (v) the pace-judgement of a quarter-miler.

(*b*) Because of the height of the obstacle (three feet), the technique resembles a cross between that of the low and high hurdles.

(*c*) Ideally, a fixed stride-pattern is desirable, but this rule is more flexible than in low or high hurdling.

Start

236. All remarks on the normal sprinting technique are applicable (section 18).

Strides to the first hurdle

237.(*a*) An average of 24 strides is required to cover the distace (40 yards) from the start to the first hurdle in the 440 yard event.

(*b*) A similar technique to that used for the other two hurdle events, plus middle distance tactics, etc, for the first 40 yards on the flat, is the style to be aimed at.

(*c*) Greater scope is given to the stride-pattern which is very flexible because of the need for pace-judgement, tactics etc.

Hurdle clearance

238.(*a*) The hurdling action for the intermediate hurdles is halfway between the technique for low and high hurdles. The take-off distance is about seven feet six inches and the landing about four feet seven inches.

(*b*) The cut-down begins when the leading foot is about 15 inches past the hurdle and the trunk-inclination forwards is about the same as in the low hurdles. Otherwise the action is literally a cross between the high and low techniques.

(*c*) Landing from the hurdle gives the same relative positions of foot and body as in the other hurdling events, but there is not quite so high a knee-lift of the trailing leg as in high hurdling. Hurdlers should learn to hurdle from the wrong foot in case of emergency during the closing stages of a race.

Strides between hurdles

239.(*a*) Generally, there is more flexibility in the 440 yard event than in the 400 metres. It is usually accepted that in the 400 metres the pattern between hurdles will be 15 up to and including the seventh hurdle and 17 from then on, though this may vary with individuals. In the 440 yard event there are three main patterns from which to choose. (i) 15 strides to the fourth hurdle; 17 for the other six hurdles; (ii) 15 strides to the fourth hurdle; 17 for the fourth to eighth hurdles; 19 for the others; (iii) 17 strides for all hurdles.

(*b*) An equal stride pattern as in (iii) is ideal, but fatigue, pace-judgement and distribution of effort may well make this impossible.

(*c*) Running technique is similar to that for the same distance on the flat, but is inclined to be a very little slower in order to save enough energy for hurdle-clearance.

Finish

240. The distance varies from 40 yards for the 440 yard event to 43·7 yards for the 400 metre event. The points for this final run-in once again resemble those for the hurdle events and the finals of the 440 yard flat race, although the hold on principle may not apply as in the flat middle distance event.

Section 34: COMMON FAULTS IN HURDLING

The following are common faults in hurdling:

241. **To the first hurdle**

(*a*) A starting position which fails to bring the athlete to the first hurdle with maximum speed.

(*b*) Using a number of strides which is out of rhythm with the strides taken between hurdles.

242. **At the take-off**

(*a*) Insufficient body-lean.

(*b*) Failure to use the opposite arm to the leading leg correctly.
(*c*) Jumping, instead of driving across the hurdle.
(*d*) Too slow a pick-up of the leading leg, due, possibly, to keeping it too straight or lifting it with an outward or inward swing.
(*e*) Allowing the arm on the side of the leading-leg to swing sideways or extend backwards, instead of forcing it back in a flexed position at the side.
(*f*) Taking off the heel-ball roll instead of from the ball of the foot.
(*g*) Pointing the toe of the leading foot.
(*h*) Insufficient split between the legs at take-off.

243. **In the air.**

(*a*) 'Posing' over the hurdle; legs and arms should move all the time.
(*b*) Failing to time the pivot correctly.
(*c*) Failing to lift the foot of the back leg as the bar is crossed.
(*d*) Failing to swing the trailing leg in a smooth rotary action.
(*e*) Failing to bring the back knee through sufficiently high, and to the mid-line of the body.
(*f*) Coming out of the 'dip' too soon.
(*g*) Ducking the head.

244. **Landing and strides between hurdles**

(*a*) Landing with the body-weight behind the leading foot.
(*b*) Landing on the heel.
(*c*) Landing off-line and off-balance.
(*d*) Failing to bring the arms into the running action immediately.
(*e*) Failing to come down running.
(*f*) Cutting short the first stride or 'flicking' the forward leg in an attempt to lengthen the stride.

245. **Run-in**

(*a*) Failing to clear the last hurdle with plenty of lean.
(*b*) Failing to dash with good form right across the finishing line.

246—250. Reserved.

CHAPTER 10

High Jump

Section 35: GENERAL

251. The key-word in high-jumping is 'economy'. As victories are won and records broken by fractions of an inch, lifting-power must be distributed scientifically. It is uneconomical, in terms of energy, to raise one part of the body higher than another when clearing the cross-bar.

25. Most novice high jumpers start with the scissor style but an economical ' lay-out ' is difficult to attain by using this method.

Physical type

25. The following physical qualities are essential if an athlete is to become a good high-jumper:

(*a*) *Youth.* Youth is a decided advantage and there is no physiological reason why high-jumping should not be started at an early age. It must be remembered, however, that peak form is usually reached between the ages of 22 and 25, and then only after years of hard and patient practise.

(*b*) *Height.* Since height is the object of this event, the tall man has a decided advantage, as he does not need the same spring as a shorter rival to clear any given height.

(*c*) *Speed and spring.*

(i) The degree of speed required varies with the style of jump used. This subject is covered more fully under the description of each style.

(ii) Spring is essential; no amount of speed or technique will compensate for lack of it.

(*d*) *Co-ordination.* Since the athlete is required to perform various movements while in the air, and these movements must conform with his flight and body-position in relation to the bar, he must have perfect control.

Section 36: MECHANICAL PRINCIPLES OF HIGH JUMPING

254. The basic mechanical principles of high-jumping are explained in the following paragraphs. Instructors must ensure that they fully understand these principles when coaching high-jumpers.

255.(*a*) In fig. 18, a box measuring six feet by two feet by one foot is lifted over a wall AB which is five feet high.

(*b*) The centre of gravity X of the box then has to be lifted eight feet above the ground.

(*c*) This requires an output of ' G ' amount of energy.

256.(*a*) In fig. 19, the box has been placed on one of its sides, so that the six feet by two feet area is facing the front.

(*b*) With the same amount of energy as before, namely ' G ', the box is again lifted and the centre of gravity X will be lifted to the same height as before (eight feet). This time, there is less bulk between the centre of gravity X and the lower edge of the box, so the wall can be raised another two feet. Therefore without additional energy being expended, the box has been lifted over a greater height.

257.(*a*) Fig. 20 illustrates this same situation being taken a stage further, so that once again the body bulk between the centre of gravity and the edge of the box is reduced this time to six inches.

(*b*) The overall gain in height in the three instances is two feet six inches.

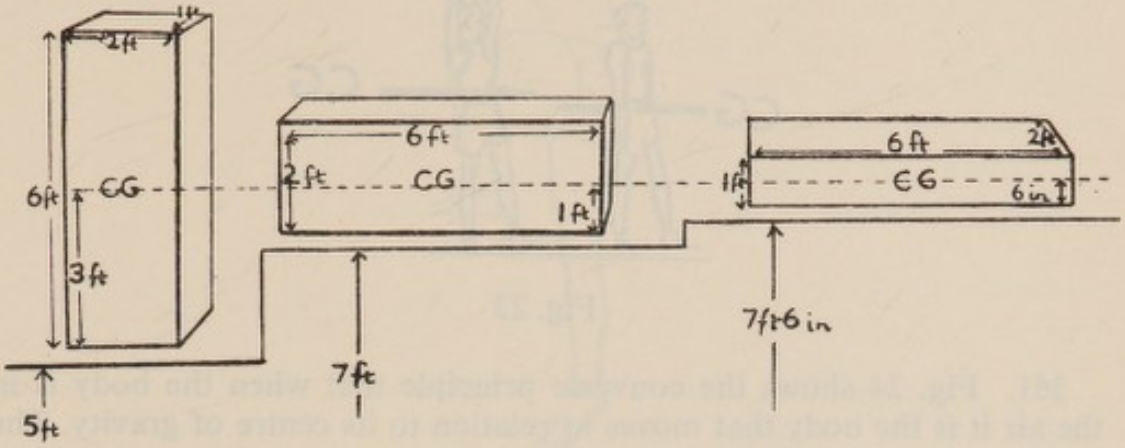


Fig. 18 Fig. 19 Fig. 20

258. Fig. 21 shows another aspect of this same theory. By bending the box, the centre of gravity is brought away from the actual body. If the box, while in this position, is eased over the wall so that part of its bulk is below the top of the wall, and equally distributed on either side of it, then the centre of gravity will actually pass below the top of the wall.

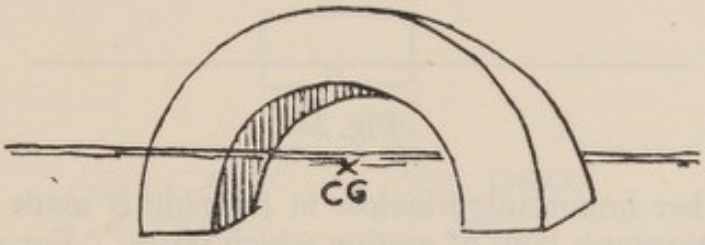


Fig. 21

259.(*a*) Fig. 22 representing an ordinary see-saw, illustrates the principle that ' For every amount of weight that is moved on one side of a centre of gravity, an equal amount of weight will be moved on the other side '.

(*b*) Hence in fig. 22, if X amount of weight is moved down at A on the see-saw, then a corresponding amount of weight will be moved up at B.

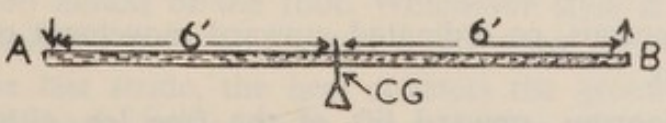


Fig. 22

260. Fig. 23 illustrates the principle that while the body is in contact with the ground the position of the centre of gravity can be changed in relation to the body. In the diagram, the centre of gravity is moved up in relation to the body by raising the arms. This is applicable to movements in all directions.

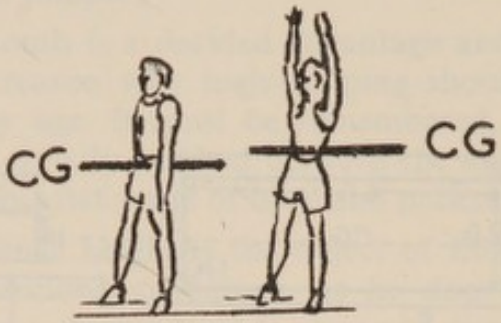


Fig. 23

261. Fig. 24 shows the converse principle that when the body is in the air it is the body that moves in relation to its centre of gravity. The body turns round the centre of gravity which continues on its flight path.

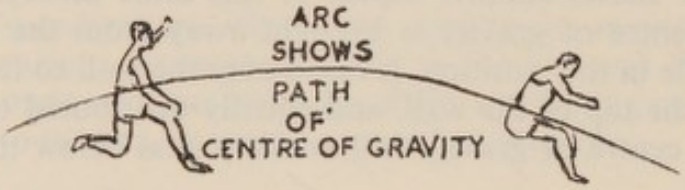


Fig. 24

262. Another important principle in jumping is made clear by one of Sir Isaac Newton's laws of motion which states: ' For every positive action in one direction there is a correspondingly equal reaction in the opposite direction '.

Section 37 : GENERAL TECHNIQUE (TAKE-OFF)

Take-off

263. Except for variations demanded by any one particular style of jump, there are four main points regarding the take-off which apply to all styles (Fig. 25).

(*a*) A vigorous, co-ordinated, upward movement of the arms or arm.

(*b*) A vigorous, upward lift of the free leg, either straight or flexed.

(*c*) Maximum extension of the take-off leg.

(*d*) Heel—ball of foot—toe roll to bring the centre of gravity into the correct position relative to the take-off foot.

Fig. 25

Stride plan

264. Although the following illustration (Fig. 26) shows a uniform stride length and equal number of strides for all styles, this is only a guide. The length of run will depend upon the length of stride of the individual athlete, while the actual number of strides will vary between a minimum of five and a maximum of 12 and 14.

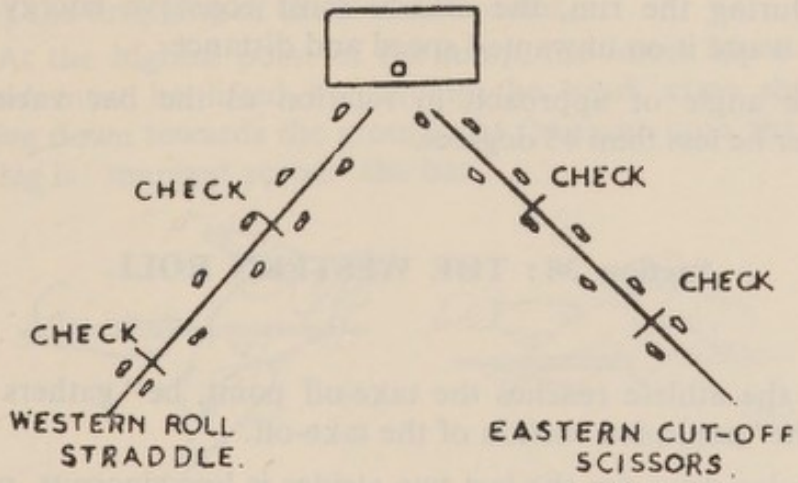


Fig. 26

265. So far as running style is concerned, some athletes prefer to run on the toes for all but the last stride, while others adopt a heel-contact and roll action of the foot. Whichever style is used, the run must be easy, relaxed and with gradual acceleration.

266. On the last stride, the heel contacts the ground first for the execution of the heel—ball of foot—toe roll. This will result in a longer stride and a 'settling' of the hips preparatory to the take-off (Fig. 27).

Fig. 27

267. In normal circumstances, the approach run for any one athlete should remain constant whenever he jumps in a competition, but circumstances may make this impracticable. The direction and force of the wind may be one cause of a change of plan. For example:

(*a*) With a following wind the overall length must be increased.

(*b*) A head wind will demand a shortening of the run.

(*c*) The style of jump used may also dictate the speed and length of run, e.g. the western roll requires less speed than either the scissors or eastern cut-off.

(*d*) During the run, the athlete must conserve energy and not waste it on unwanted speed and distance.

268. The angle of approach in relation to the bar varies, but it should never be less than 45 degrees.

Section 38 : THE WESTERN ROLL

Take-off

269. As the athlete reaches the take-off point, he ' gathers ' himself ready for the ' explosive ' action of the take-off.

270. His leg drive for the last two strides is less-vigorous, permitting a ' semi-cruising ' action. The longer last stride gives a greater arc through which the free leg can swing.

271. The actual spring itself now starts. The take-off foot has contacted the ground in line with the approach run, and the ' settling ' action has allowed a moderate bend of the take-off leg (controlled tension).

272. As the take-off foot contacts the ground, the free leg is swung vigorously upwards.

(*a*) the arms are moved with the normal oppositional control, aiding lift and giving balance. As the free leg swing is being completed, the knee of the take-off leg straightens, giving a maximum drive from that leg, and the rock-over on to the toe is completed. By this time, both arms are in a forward and upward position. Great care should be taken to synchronize the final drive of the take-off foot with the final lift of the free leg.

(*b*) It is found that while some jumpers do not complete the foot-roll until the free leg has reached crossbar height, others execute this movement when the leading foot is well below the crossbar. Those who delay this foot-roll usually use the long lever of a nearly-straight leading leg. Conversely, those who perform the foot-roll quite early, use the shorter lever of bent leading leg.

273. When the jumper leaves the ground, he begins to flex the take-off leg so that, as bar height is reached, the knee of this leg has been brought up near to the chest. The free leg has continued its forward movement and the arms should still be extended in front of the body.

Clearance action (Fig. 28).

274. A body-turn is the result of the force derived from the swing of the free leg. This turn must position the body at right angles to the bar, with the take-off foot, knee and hip in the same plane.

275. The actual clearance is made by sweeping the free leg across the bar down towards the ground, this movement being co-ordinated with the arms which are also moving down towards the pit. The result of this is to raise the hips and the movement is aided by the reaction caused by the dropping of the lower shoulder.

276. At the highest point of the jump, the lower hip is the danger point, and must be lifted by forcing the head, arms shoulders and leading-leg down towards the ground. At the same time, the knee of the take-off leg is ' snapped across ' the bar.

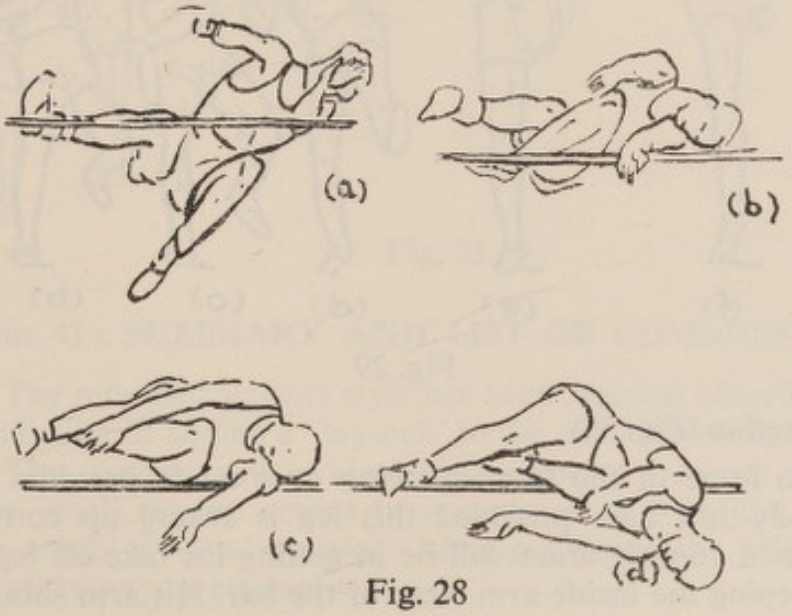


Fig. 28

Focus of head and eyes

277. The jumper should stand a little behind his starting check and concentrate on gaining poise and confidence for his jump. He should look towards the bar but not directly at it.

278. At the start of his run he should look at the first check mark and as that is reached, the focus should be on the second check. From the last check he looks sharply at the bar until it is cleared.

279. For the novice who varies his take-off point, it is sometimes advisable to look at the take-off point until it is attained and then quickly change his concentration to the bar.

Section 39 : THE STRADDLE

Approach

280. The approach for the straddle is similar to that used for the Western Roll. The length may sometimes be slightly longer dependant upon the characteristics of the individual athlete.

281. Some straddle-style jumpers prefer to speed up slightly on the last three strides, but the execution of this depends upon the ability to transfer forward momentum into upward motion.

Take-off

282. The take-off is the same as for the Western Roll, with the leading leg slightly flexed (but not to the extent that the foot does not swing above the head). The inside arm is swung forwards and upwards between the body and the bar (Fig. 29).

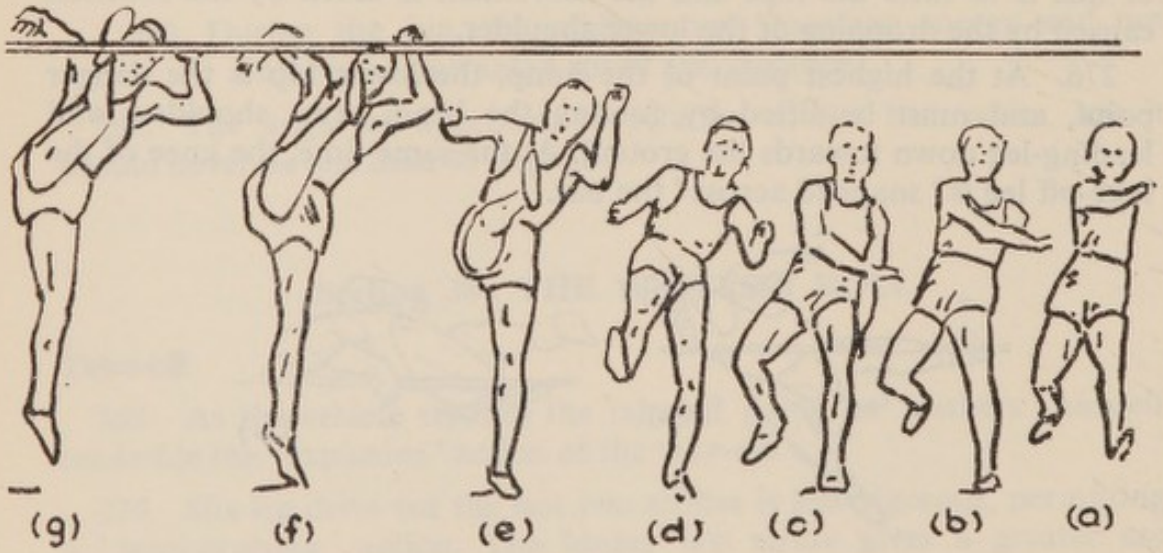


Fig. 29

Clearance action (Fig. 30)

283. The force of the free-leg swing once again provides the force for the body-turn and, provided this leg is swung up correctly, the jumper's main consideration will be in getting his take-off leg over the bar and keeping the inside arm clear of the bar. His arm should ideally

be pushed over the bar between the body and bar, and then down to the pit. A variation of this action is for the arm to be held close to the side of the body. It must never be allowed to swing behind the body.

284. The clearance of the take-off leg requires precision and timing. Some try to lift this leg, as in the Western Roll, and straighten it in one smooth action over the bar as the roll is completed. Others depend upon a more spasmodic kick upwards with this leg to clear the bar. The lift of this leg is aided by the downward movement of the arms, head, shoulders and leading leg.

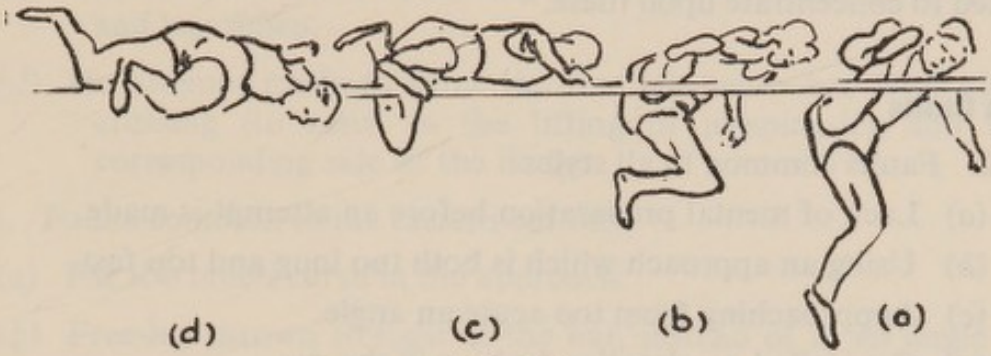


Fig. 30

Section 40 : EASTERN CUT-OFF

285. Athletes and coaches have their own opinions of the various styles of jumps, but generally it is accepted that the Eastern Cut-off is seldom used because of the very difficult technique required.

286. The following diagram (Fig. 31) shows the method of crossing the bar in the eastern cut-off style, and is useful in comparing the technique of this style with the western roll (Fig. 28) and straddle (Figs. 29 and 30).

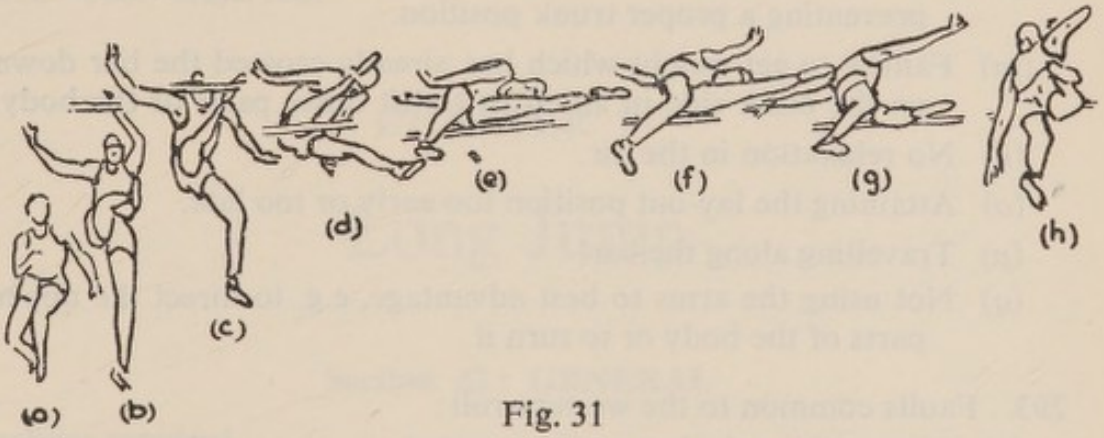


Fig. 31

Section 41 : SUMMARY AND LIST OF COMMON FAULTS

287. The modified scissors style has been rejected completely because of the difficulty in adding a ' lay-out ' to the old scissors style.

288. The western roll is ideal for beginners because it calls for a relatively small energy output in proportion to body-lift, and readily allows a good ' lay-out ' position. After perfecting the western roll, the straddle style may be attempted.

289. The high jumper should place emphasis on speed in completing the spring, once the take-off foot strikes the ground.

290. Height is lost because of over-tension during the last two strides, semi-relaxation is essential at this point.

291. The degree of efficiency of one style over another is difficult to determine exactly, as no jumper is ever as truly efficient in one style of jump as another. However, the two styles which produce the best results are the western roll and the straddle, and potential jumpers are advised to concentrate upon these.

Main faults

292. Faults common to all styles:

(*a*) Lack of mental preparation before an attempt is made.

(*b*) Using an approach which is both too long and too fast.

(*c*) Appproaching from too acute an angle.

(*d*) Controlled acceleration lacking in the run.

(*e*) Too tense in the approach with subsequent failure to ' gather ' before the leap.

(*f*) Not using a measured approach.

(*g*) No lean back, and pronounced ' heeling ' at the take-off.

(*h*) Insufficient emphasis on free-leg lift and arm action at the take-off.

(*j*) Anticipating the turn in the air before leaving the ground.

(*k*) Twisting the jumping foot, thus losing leverage.

(*l*) Disinclination to allow the head to drop into a lay-out, thus preventing a proper trunk position.

(*m*) Failure to get weight which has already crossed the bar down on the other side in an effort to lift other parts of the body.

(*n*) No relaxation in the air.

(*o*) Attaining the lay-out position too early or too late.

(*p*) Travelling along the bar.

(*q*) Not using the arms to best advantage, e.g. to direct the upper parts of the body or to turn it.

293. Faults common to the western roll:

(*a*) Approaching the bar too ' squarely '.

(*b*) Insufficient emphasis on high lift of the jumping leg after the spring.

(*c*) Head, shoulders and arms not thrown down over the bar quickly.

(*d*) No effort made to elevate the inside hip or to draw it across the bar.

(*e*) Free leg trailing during the clearance, instead of preceding it.

294. Faults common to the straddle:

(*a*) Head and chest not turned towards the ground in the clearance, thus twisting the hips, cramping the leg action and forcing the thigh of the jumping leg on to the bar.

(*b*) Arm corresponding to free leg thrown back too vigorously in clearance, thus forcing the thigh of the jumping leg on to the bar.

(*c*) Head thrown back, hollowing the back and forcing the hips and legs down.

(*d*) No attempt made to force the free leg below bar level after crossing (to assist in the lifting of jumping-leg and the corresponding side of the body).

295. Faults common to the eastern cut-off:

(*a*) Far too much curve in the approach.

(*b*) Free-leg thrown straight at the bar, instead of at an angle to it.

(*c*) Trunk and leg actions in the lay-out not timed to coincide.

(*d*) Free leg not forced down on the pit side.

(*e*) No attempt to bring the weight below bar level on take-off side by throwing head, arms and shoulders vigorously downwards and backwards.

(*f*) Chest and head not facing the ground during the lay-out.

(*g*) Failing to get the face out of the way after the bar is cleared.

296—300. Reserved.

CHAPTER 11

Long Jump

Section 42: GENERAL

Qualities required

301. In the event as we know it today, it is difficult to define the ideal physique, for world-class jumpers have been of various physical types. There are three qualities however, that all good jumpers must possess. (*a*) Speed; (*b*) Spring; (*c*) Co-ordination.

302. Speed is a primary factor. Statistics show that all athletes who have jumped approximately 26 feet have been capable of running 100 yards in, or under 10 seconds.

303. Spring is essential to project the body into the air while traveling at full speed.

304. Co-ordination is required throughout the whole jump to knit speed and spring into one cohesive effort.

Section 43: APPROACH RUN AND TAKE-OFF

Approach run

305.(*a*) The length of the approach run is dependent on the athlete's ability to build up maximum controlled speed. This is the fastest at which a man can run with enough control to perform another action.

(*b*) The minimum number of strides any athlete is likely to use is twelve. The maximum is harder to determine, but rarely exceeds twenty.

Check marks

306.(*a*) Check marks are used to ensure uniformity of stride and acceleration.

(*b*) The placing of these varies with the individual, but No. 1 check mark is generally at the third stride and No. 2 check mark will usually be at the sixth stride from the take-off board (*see* Fig. 32).

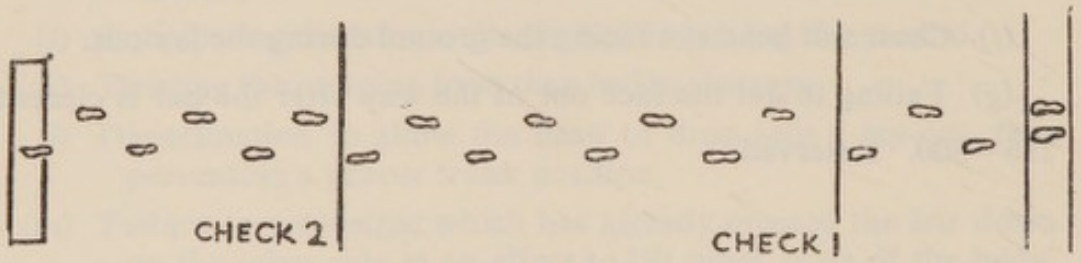


Fig. 32

Cruising (coasting)

307. Maximum controlled speed must be attained at least four strides from the board. These last few strides are covered by the athlete cruising, thus enabling him to concentrate on the action of take-off.

Take-off

308. *Heel—ball of the foot—toe roll.*

(*a*) This is sometimes varied with a flat-foot action on the board. whatever the action, the centre of gravity of the body must be brought behind the take-off foot so that it will automatically be in the correct position at the end of the take-off action.

(*b*) The recommended heel—ball—toe roll action will slightly lengthen the last stride and allowance must be made for this in the measured run.

(*c*) This action is synchronized with a ' settling-down ' or ' gather ' and this is brought about by a bending of the take-off leg, the degree of bend varying with the speed and amount of spring used.

309. *Maximum extension of take-off leg.* This action can only be made correctly after the action described in para 308 has been correctly carried out. The fullest use must be made of this leg, and care must be taken that it is not taken off the ground too soon.

310. *Vigorous, high knee-lift.* To obtain the greatest possible flight of the centre of gravity, the best angle of take-off is one of about 35 degrees. The forward inclination of the body should be approximately 75 degrees from the horizontal. While the latter is brought about by the roll of the take-off foot, the former is mainly the result of the knee-lift of the free leg.

311. *Co-ordinated forward-upward movement of the arm(s).* A study of champions performing the ' hitch kick ' style of jump (*See* para 314) shows that it is common to maintain normal ' oppositional control ', with a slightly more vigorous action of the leading-arm to off-set the loss of balance due to the body being supported by one foot only. This maintenance of ' oppositional control ' however, is dependent on the style of flight used.

The sail style of jump is more conducive to the double-arm action.

Section 44 : THE FLIGHT

Aim of actions during flight

312. The aim of all flight-reactions is to put the body into the best possible position for the execution of the landing. At the high-point of the jump, the trunk should at least be upright. The ideal position is a slight backward tilt. All styles of flight have this as their object.

Sail style

313. This style is rather inadequate as it does not allow the trunk to be brought upright in preparation for the landing.

(*a*) The forward rotation of the body set up at the moment of take-off is increased by the angular velocity applied to the body in the sail position.

(*b*) Muscular action also plays its part. The fact that muscles are joined to bones on either side of a joint, results in movement on either side of that joint if the muscle is contracted while the body is in the air. Consequently, any attempt to lift the legs will also bring the trunk forwards and downwards.

Hitch kick style

314. *General.* It must be understood that this ' running in the air ' style of flight does not in any way propel the body forwards. The arc of flight is governed by the speed and angle of take-off and once the body

is off the ground, nothing will increase this arc. The action of the body when in the air is to turn around its centre of gravity.

315. *Legs.* The leg moving backwards is kept straight thus forming a long lever which exerts a greater force than the short lever of the opposite leg which is flexed, coming forwards. This predominance of one lever over the other in the running action is the main factor which keeps the trunk upright.

316. *Arms.*

(*a*) Assuming that the take-off is made from the right leg, the right arm goes forwards in opposition to the left leg.

(*b*) Having reached the limit of its forward movement, it will travel back in a circular action to complete 360 degrees and be behind the trunk on landing to aid recovery.

(*c*) The left arm starts with a slight backward movement at take-off, and then makes a rather restricted forward movement before following the right arm in a circular action.

317. The following diagrams (Figs. 33(*a*) and 33 (*b*)) illustrate the movements described in para 316 and show the variation in technique of two world-famous long jumpers.

Owens (U.S.A.) 8·13 metres

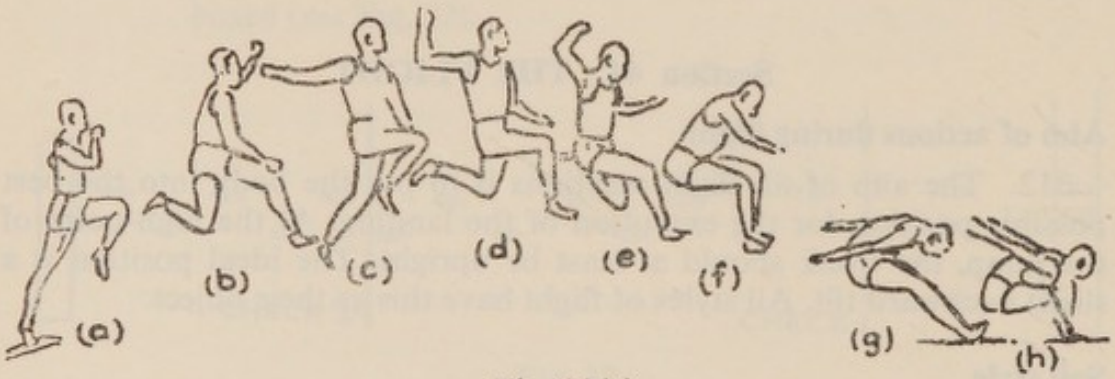


Fig. 33(*a*)

Long (Germany) 7·97 metres

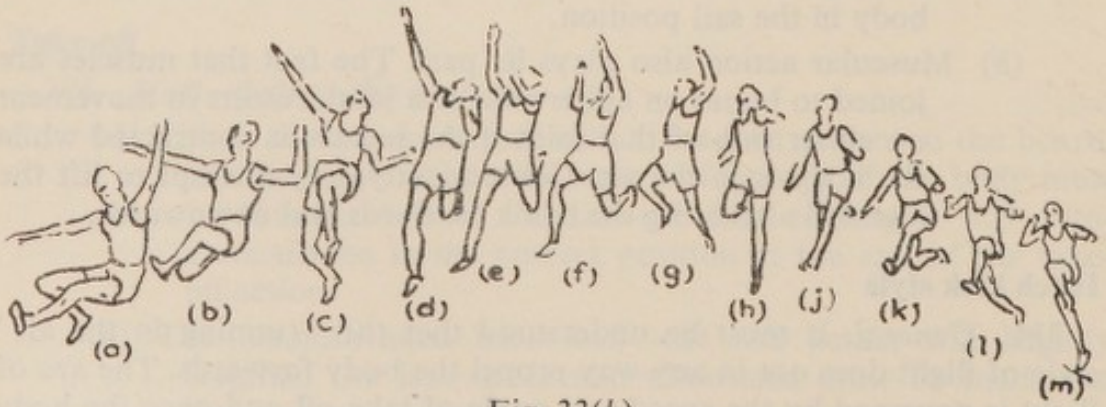


Fig. 33(*b*)

Hang style

318. This style relies mainly on the theory of action and reaction, plus the 'whip' of the body in one direction which is the result of deliberate muscle tension in the opposite direction.

(*a*) Both legs are carried to the rear and the resultant reaction of the trunk above the centre of gravity causes the body to arch.

(*b*) This arch sets up muscle tension which allows the legs to be brought forward and upwards at the high point of the jump.

(*c*) This action of the legs being brought forward will bring the trunk forward as in the sail style, but the legs being the lighter must come forward more quickly with a greater range of movement than the comparatively heavy mass of the trunk.

Section 45 : THE LANDING AND RECOVERY

Landing

319.(*a*) As the heels cut the sand, the jumper should have his trunk upright; this will enable him to keep his legs out-stretched to gain maximum distance.

(*b*) The arms are thrown back immediately prior to the landing in an effort to counter-balance the action of the legs and therefore to keep the trunk as erect as possible.

(*c*) On landing, they are then thrown forwards to pivot the weight of the body over the fulcrum of the heels. If the trunk comes forward before the heels cut the sand, then the legs will be forced down into the pit too soon and distance will be lost.

Recovery

320. This, the last part of the jump, is by no means the least because, if the athlete does not have the ability to recover, i.e. transport his body in front of his feet on landing, all the advantage of a good flight and landing will be lost. the following factors are therefore very important:

(*a*) When the heels contact the sand, the legs bend at the knees, thus shortening the lever, and allowing the forward momentum, aided by a forceful swing of the arms, to carry the body over the feet.

(*b*) The main points to remember are:

(i) The legs must be 'athletically straight' when the heels contact the sand.

(ii) Bending at the knees too soon is fatal.

(iii) The feet must be close together.

Section 46 : MAIN FAULTS

321. The main faults in the various phases are detailed in paras 322 to 325.

In the approach run

322.(*a*) ' Chopping ' or overstriding before reaching the board.
(*b*) Too little speed in the run-up.
(*c*) Being ' tied up ' by attempting to obtain too much speed too quickly.
(*d*) Not shortening the last stride to the board.
(*e*) Losing an appreciable amount of speed during the ' cruising ' phase.

In the take-off

323.(*a*) Leaning back at the board.
(*b*) Throwing the head back on leaving the board.
(*c*) Foot not coming to the board at right angles to it.
(*d*) Employment of an exaggerated heel-ball-toe roll.
(*e*) Failure to fully extend the take-off leg.

In the flight

323.(*a*) Trunk not upright until just before the heels cut the sand.
(*b*) Being off balance in the air (i.e. introducing a lateral movement into the jump).
(*c*) Arm action not co-ordinated.
(*d*) Dropping the buttocks.
(*e*) Twisting sideways in the flight through the air, or throwing the head back.

In the landing

325.(*a*) Arms not back before the heels cut the sand.
(*b*) Trunk coming forward before the heels cut the sand.
(*c*) Losing distance through dropping the legs or obtaining an insufficient leg-shoot.
(*d*) Landing with the legs apart.
(*e*) Dropping one foot behind the other on landing.

326—329. Reserved

CHAPTER 12

Hop, Step and Jump (Triple Jump)

Section 47 : GENERAL

Physical type

330.(*a*) Height and strength must be combined with speed if an athlete is to be an ideal performer at this event.

(*b*) The athlete who excels in this event is usually the one with stocky strong legs and good sprinting speed.

(*c*) It is often found that the tall athlete has not enough strength in the legs to withstand the shock imparted to them in the hop-step-and-jump.

331. The athlete who aspires to this event must have the capabilities of a long-jumper, but the reverse need not be the case. Good long-jumpers do not always develop into good triple jump performers. Speed however is an essential; not just the ability to run fast, but the ability of the trained sprinter to control his actions and to maintain constant stride length.

Section 48 : APPROACH, TAKE-OFF AND RATIO OF PHASES

Approach run

332. The same principles apply as in the long jump (*see* section 43), but because of the greater control required at take-off, the run should be very slightly slower.

Take-off

333. Greater control is required at the take-off because the height of the hop must be controlled. Too much height may result in either a collapse on landing and therefore a very poor hop follows the step, or the step will be fore-shortened.

334. On problem for participants in this event is to decide from which foot to take-off. The points affecting this decision are:

(*a*) If the athlete takes off for the hop and step with his stronger leg, the weaker leg is then used for the single movement of taking off for the jump. The stronger leg is thus used twice.

(*b*) If the athlete uses the weaker leg for the hop and step, the stronger leg is saved for the all-important jump, when the body has lost a considerable amount of its forward momentum and will depend more upon muscular power.

335. All points of technique for the long-jump take-off (*see* section 43) are applicable to the hop, step and jump.

336. Both styles have been used with good results and there is not much to choose between them. The athlete and his coach must decide which is the better for his particular characteristics.

Ratio of hop: step: jump

337. Far too many athletes believe that a long hop culminates in a good aggregate length. This is definitely not the case, particularly in the novice stage.

(*a*) If the athlete goes 'all out' for the hop, he has neither sufficient control nor momentum to execute even a moderate step and jump. The first two movements must therefore be controlled.

(*b*) To do this there must be a definite ratio between the three phases of the action. There are many combinations, particularly for the polished performer.

338 The athlete, during his training, finds the distance of the overall length which is near to his maximum and divides the three phases into a given ratio, two suggestions being: (*a*) 7 : 5 : 6, (*b*) 4 : 3 : 5.

339. Using para 338(*a*) as an example, if the overall distance of the novice is 36 feet, then working on the ratio of 7 : 5 : 6, the hop will be 14 feet, the step 10 feet and the jump 12 feet. These distances will increase in proportion to any increase in the total length.

340. Not every athlete finds his best form by using the ratio in this particular order, and while it is generally the hop which is the greatest of the three, there is no reason why the order of the ratio should not be 6 : 5 : 7 or any other combination. An even rhythm throughout is ideal.

Section 49 : THE THREE PHASES

PHASE 1—The hop (Fig. 34)

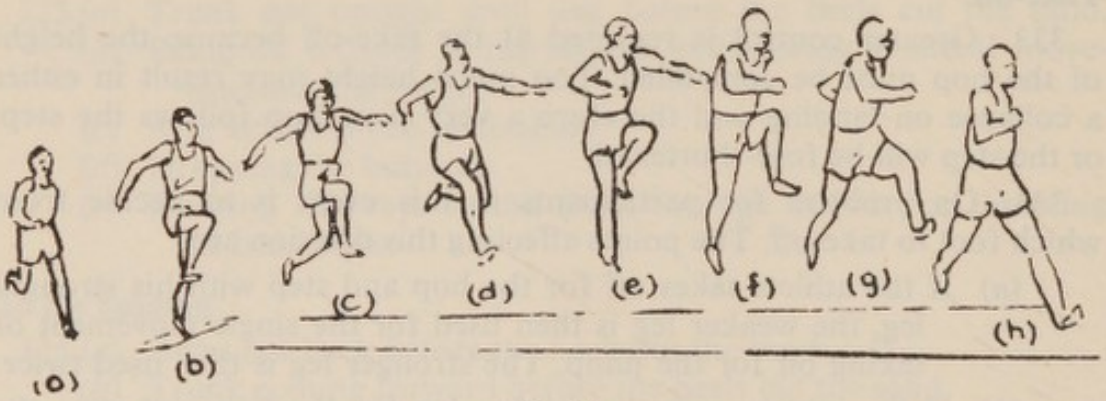


Fig. 34

341. Having performed the take-off and launched the body into the air, the body must be kept upright. The leading leg must be relaxed and allowed to swing to the rear.

342. The take-off leg must be brought forward with the knee bent to form a short lever and be in a position for the landing from the hop and the take-off for the step.

343. The whole movement of the leg change resembles that of the hitch-kick and must be smooth and co-ordinated.

344. The landing from the hop is made on the flat of the foot with the trunk at least upright. On no account must the centre of gravity be in front of the foot on landing, since the body has both forward momentum and rotation.

345. If, on landing, the centre of gravity is over or behind the foot, it will move forward automatically to be in the correct position at take-off to enable the force to drive the body forward and upward into the step.

346. On the landing from the hop, prolongation of flight is as important as in the landing from the long jump. This is attained by keeping the leading leg (after the leg-change) off the ground as long as possible, thus allowing the body to follow more completely the path taken by the centre of gravity.

347. While it is a fault to make an 'all out' effort and hop too far, it is equally a fault to reduce the hop to such an extent that forward rotation is increased on landing instead of being decreased.

PHASE II—The step (Fig. 35)

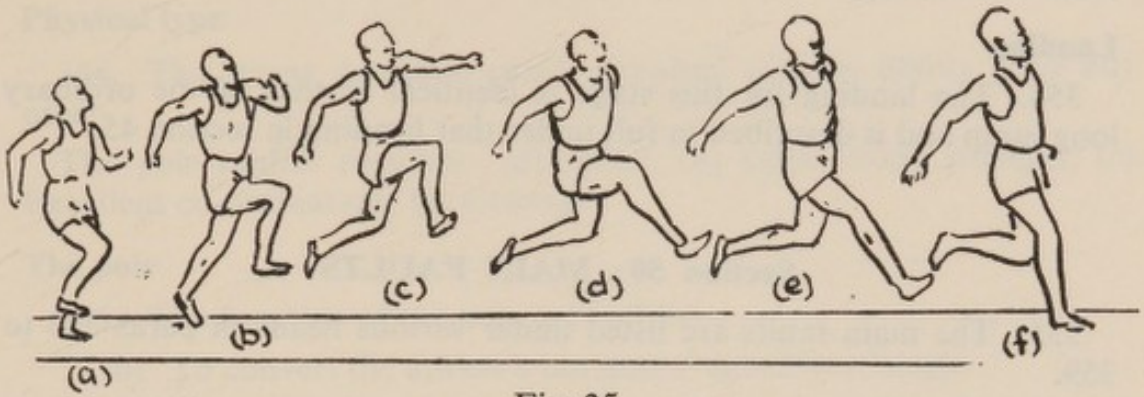


Fig. 35

348. Having landed from the hop, the take off action is repeated as before. The free leg, having moved to the rear during the hop, is now brought vigorously but smoothly forwards with a high knee-lift.

349. Once again the trunk must be kept upright (ideally, leaning slightly backwards). If anything, this is even more important in the step, since forward rotation of the body tends to increase, with the result that the step is considerably shortened.

350. The two main factors of the step are the upright trunk position and the prolongation of flight. If the trunk moves forwards, then forward rotation is increased, making prolongation of flight more difficult.

PHASE III—The jump (Fig. 36)

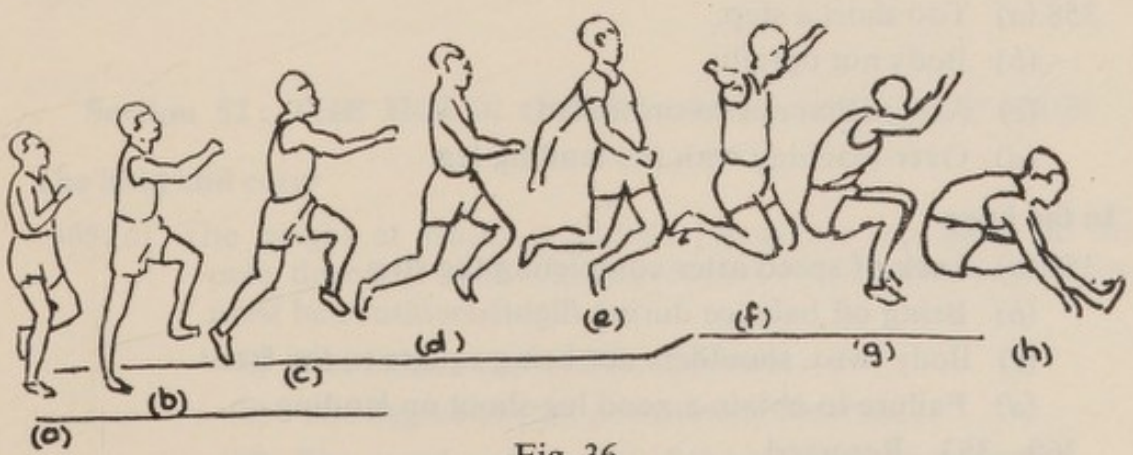


Fig. 36

351. Since forward momentum has now been reduced to a minimum the athlete must be prepared to exert maximum effort at take-off.

352. This can only be done if the landing from the step is made correctly on the flat of the foot with the centre of gravity over or behind the foot. The trailing leg must be well to the rear, ready to swing vigorously forwards into the jump.

353. Very few men are able to perform more than a simple sail style of flight, though the hitch kick may be performed to advantage. Some coaches believe that the hang style of flight lends itself readily to this stage, but the method used depends upon the capabilities of the athlete concerned.

Landing

354. The landing for this stage is identical to that of the ordinary long jump and is described in full under that heading in section 45.

Section 50 : MAIN FAULTS

355. The main faults are listed under various heads in paras 356 to 359.

In the approach

356.(*a*) Inconsistency of stride length.
(*b*) Leaning back at the take-off board.
(*c*) Foot not coming down at right angles to the take-off board.
(*d*) Too little speed at the board.
(*e*) Uncontrolled speed in the run-up.

In the hop

357.(*a*) Too long a hop.
(*b*) Body not upright during flight through the air.
(*c*) Body-weight not over foot on landing.
(*d*) Dropping the head backwards or forwards during flight.

In the step

358.(*a*) Too short a step.
(*b*) Body not upright.
(*c*) Arm action not co-ordinated.
(*d*) Over-reaching with the landing leg.

In the jump

359.(*a*) Lack of speed after completing the step.
(*b*) Being off balance during flight.
(*c*) Body twist, shoulders not being square to the front.
(*d*) Failure to obtain a good leg-shoot on landing.

360—363. Reserved.

CHAPTER 13

Pole Vault

Section 51 : GENERAL

Physical type

364. This event demands more all-round athletic ability than any other.

The pole-vaulter requires: (*a*) Speed; (*b*) Upper-body strength; (*c*) Excellent co-ordination; (*d*) Courage.

The pole

365. The function of the pole is two-fold:

(*a*) To convert the athlete's horizontal speed into height.

(*b*) To enable the vaulter to increase his height by a pull-push action.

366. The following points must be considered when selecting a pole: (*a*) Strength; (*b*) Spring; (*c*) Balance.

NOTES:

(i) The girth of the pole has no direct relation to its strength, rigidity or weight.

(ii) The pole must spring quickly, and not more than three or four inches out of line, and should spring uniformly along its entire length.

367. A slow run may compensate for a pole which is too stiff.

368. Vaulters who are lacking in strength for the pull and push should use a more springy pole as it gives them added time for execution of the movement.

Section 52 : THE HOLD, CARRY, AND APPROACH RUN

The hold and carry

369.(*a*) The height at which a vaulter places his top hand on the pole depends upon his capabilities. The following factors must be considered:

(i) The height at which he can vault.

(ii) The degree of pull-push action obtained.

(iii) The speed and control of the run and the take-off.

(*b*) The vaulter should not be allowed to keep changing his hand position on the pole as this will result in a constant changing of timing etc.

(*c*) *Angle of pole*. There are two different methods of carrying the pole:

(i) With the point of the pole above shoulder height, the pole forming an angle of about 45 degrees with the ground.

(ii) With the pole point considerably lower so that the pole is level with the ground (Fig. 37).

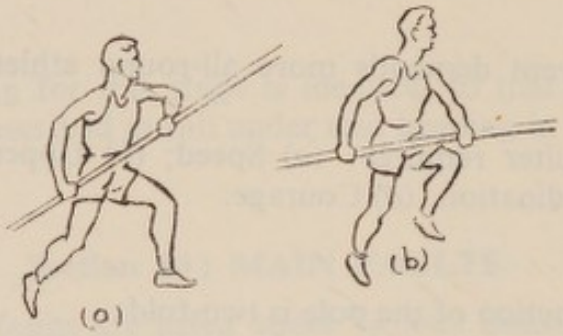


Fig. 37

(*d*) *Hand position*. The hands when holding the pole at the side of the body should be wide enough apart to allow free movement of the arms while running.

(*e*) The forearm of the front hand should be parallel to the ground and about level with the waist.

(*f*) The rear arm should be bent with the elbow pointing slightly outwards.

(*g*) During the run, the rear (top) hand does not grip the pole firmly, but acts as a guide to the pole-point. A firm grip by this hand will 'freeze' the shoulders and impair running technique.

The approach run.

370.(*a*) A vaulter who takes off from his left foot will carry the pole on the right-hand side of the body so that the right hand will be the top hand during the vault.

(*b*) The length of the approach run will depend mainly upon two things.

(i) The ability of the athlete to build momentum.

(ii) The maximum speed at which he can control his vault.

(*c*) The method of obtaining the approach run and the use of check marks is identical to that of the long jump.

(*d*) The accuracy of the run and the check marks are as important as their counterparts in the long jump. A good vault largely depends upon a good take-off, which in its turn depends upon a good approach run.

Take-off

371.(*a*) The actual point of take-off depends upon the position of the hands on the pole when they are together and above the head. The correct position is one in which a vertical line, drawn from the hands and through the body, would pass through the take-off foot. The arms should be very slightly flexed (*see* Fig. 38(*g*)).

(*b*) With the take-off foot directly below the hands as in Fig. 38(*g*), the take-off is smooth. It becomes a rhythmical, co-ordinated action designed to give maximum height in proportion to speed and vaulting ability.

(*c*) About nine out of every ten faults made while in the air originate from some movement incorrectly performed at take-off.

Section 53 : THE PLANT AND SWING

The plant

372. This is the transition from the approach run to the take-off. It is the action performed when the athlete, having obtained optimum speed, lowers the pole-point into the slip-way and moves his hands ready for the take-off.

373. There are two main styles of plant used :

(*a*) The ' underhand plant ', which is executed over the last four paces of the run.

(i) It is made by lowering the pole into the slip-way and at the same time pushing it forwards with the right or rear hand, so that this hand passes close to the hip and the pole slides through the forward hand.

(ii) As both hands come together, they move forwards above the head so that, at the end of the last stride, the correct take-off position is attained. This must coincide with the pole-point contacting the stop-board of the slip-way.

(iii) The whole movement must be smooth with the pole moving forwards and upwards without any decrease in speed.

(*b*) The ' over-hand plant ' is a shorter, speedier action which takes place during the last two strides.

(i) The rear hand is turned slightly outwards to clear the body. It then pushes the pole quickly forwards and upwards past the shoulder.

(ii) The hands are brought together above the head as before.

374. The main difference between the two styles are:

(*a*) A faster movement by the overhand style which helps to maintain pole-speed.

(*b*) In the over-hand style the pole contacts the stop-board of the slip-way directly. In the under-hand style, it tends to slide down the floor of the slip-way during the completion of the plant.

375. **Points common to any style**

(*a*) The pole, centre of the slip-way and point of take-off must be in a straight line with the line of approach.

(*b*) No speed must be lost and the whole movement must be co-ordinated.

(*c*) Care must be taken that the hands come together above the head at the end of the hand-shift. With the hands together, the weight is distributed between the arms and a more efficient swing, pull-up and push are possible.

The swing (Figs. 38 and 39).

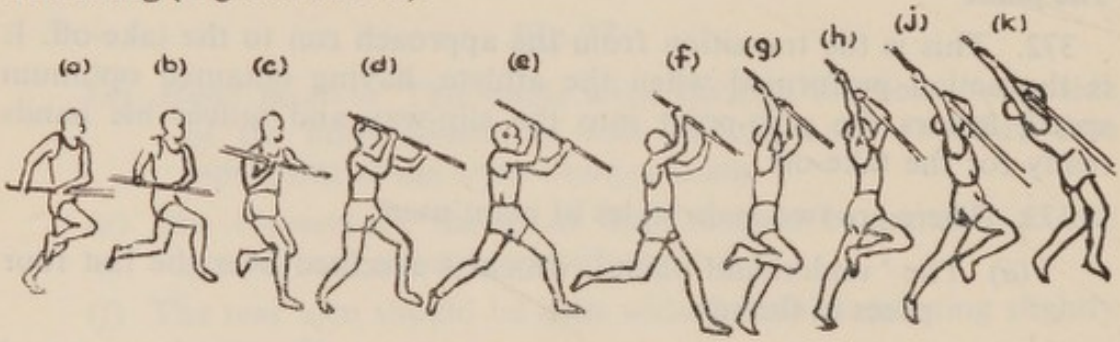


Fig. 38

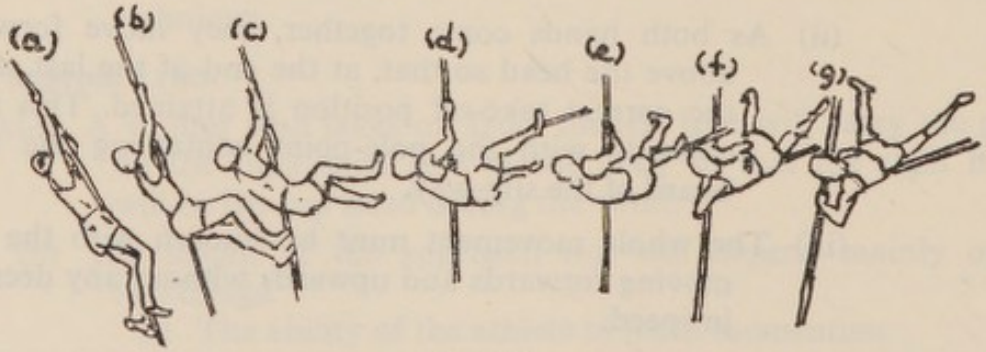


Fig. 39

376. This is the start of the actual vault. The aim is to move the pole into the vertical and to place the body on the pole in such a position that, by pulling and pushing with the arms, added height may be obtained. This action closely resembles two pendulums; one, the pole with the pivot at the pole-point; two, the body with the pivot at the shoulders and arms.

377. The first point to remember is that, between the take-off and the centre of gravity of the body coming in line with the pole, power is needed. Since the body swinging on the pole generates centrifugal force, the body must aid this by staying as straight as possible and so lengthening the radius of the circle described by the feet.

378. The body, with the legs extended, should swing close to the pole and from a position directly behind the pole (Fig. 40). If the take-off is made from the side, the body swings inwards towards the pole as well as upwards and potential height is lost.

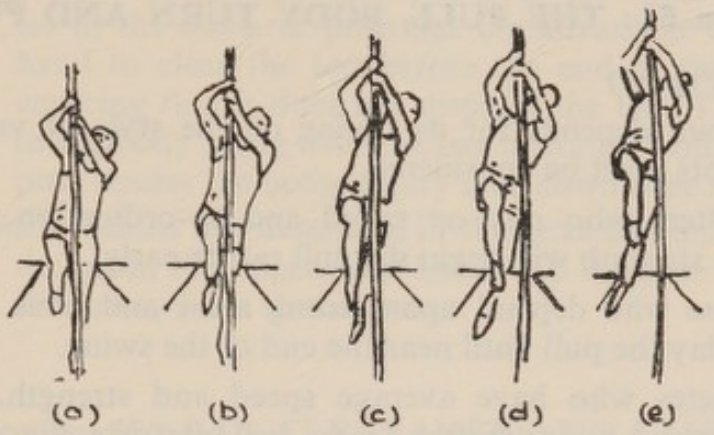


Fig. 40

379. There are two schools of thought concerning the duration of the swing. One is that the swing should be prolonged for as long as possible. The other believes that the swing should be curtailed by an early pull and flexing of the hips, which shortens the lever of the body-pendulum and consequently increases the speed.

380. While the former idea is generally considered the better, there are points for and against both.

(*a*) It must be realized that perfection in both swing and pull is not possible and there must be a compromise between the two.

(*b*) If the pull is made too early and hurriedly, the pole will not reach the vertical position because if the pull is started before the body is past the pole, then the pole loses speed.

(*c*) On the other hand, a maximum swing will not allow time for an efficient pull-up.

381. The speed at which the movements are performed govern, to a degree, their efficiency.

(*a*) Too little speed will make the vault an act of strength unaided by body momentum.

(*b*) Too much speed will give too great a build-up of centrifugal force and so make the pull-up harder to perform.

382. The body must at all times stay close to the pole so that the centre of gravity of the body is over the base of the pole. This tends to

conserve pole momentum and allows the force of the pull and push actions to be directed down the length of the pole to the resistance of the ground.

383. The height of the hand-grip on the pole affects the timing of the swing and pull. The higher the grip, the longer the pole swing; the pole tends to rise more slowly and consequently more speed is needed.

384. The position at the end of the swing, and the leg flexion, is shown in Fig. 39.

Section 54: THE PULL, BODY TURN AND PUSH

The pull (*see* Fig. 39)

385. The pull depends for its timing on the style of vault and the following points must be considered.

(*a*) Vaulters who rely on speed and co-ordination rather than on strength will begin the pull rather early.

(*b*) Those who depend upon strong arms and have little speed, delay the pull until near the end of the swing.

(*c*) Athletes who have average speed and strength, but above average co-ordination, may well perform the pull-up half way between the two methods described in (*a*) and (*b*) above.

(*d*) Ideally, the pull-up should be performed as the pole reaches the perpendicular. The forward-upward action of the legs should continue and, as the pull is started, the hips should be higher than the shoulders.

(*e*) If the pull is so timed that these three points are co-ordinated, then the body will be forced upwards over the bar and not outwards on to it.

The body turn

386.(*a*) Towards the end of the pull-up, the arms must be flexed so that the body is close to the pole.

(*b*) The feet are quite close together but the right is slightly in front. The vaulter should be in a vertical position with the thighs flexed and the knees slightly bent. The body is still moving forward and upward.

(*c*) To be in a position to push himself higher, the vaulter must turn to face the runway. This is done by allowing the right leg to swing until the foot is above the bar.

(*d*) The left leg is kicked upwards and outwards. This action, aided by the fact that one hand is above the other, will bring the vaulter round so that he is in a hand-stand position on the pole, which by now has reached the vertical (*see* Fig. 39).

(*e*) The arms should be bent and the pole held close into the shoulder so that the arm action is directed down the length of the pole.

The push up

387.(*a*) There are two main styles of push action and to a great extent these actions govern the style of cross-bar clearance. These are:

(i) A vigorous push is made with both arms, raising the body six to ten inches.

(ii) The vaulter lets go of the pole with one hand and swings it over the bar while vigorously pushing with the other.

(*b*) While more push is obtained from the method described in (*a*) (i) the one-arm push has the advantage of allowing one hand to clear the bar before the end of the push, thereby ensuring that it does not displace the bar. This style results in the body going over the bar laterally, whilst the two-hand push causes the body to stay face down over the bar.

(*c*) Both actions are described in the next section. At the end of the push, the fingers and hands flip the pole away so that it falls away from the cross-bar.

Section 55: BAR CLEARANCE AND LANDING

Bar clearance

388. There are two main styles of bar clearance, both resulting from a two-handed push up.

Fly away style

389.(*a*) This is probably the most natural style, but requires speed for good execution. It depends upon the theory that, if the feet and hips are forced high enough (between 50 degrees and 60 degrees), the body will follow on that line.

(*b*) When the legs are over the bar, they are brought back against the buttocks with the result that the head, shoulders and arms are lifted above the bar.

(*c*) The main danger of this style is that, if too little speed is used, the body cannot follow the legs and will drop down on to the cross-bar.

The jack knife style

390.(*a*) This style is more difficult to perform since it requires more precision and timing.

(*b*) It is generally used by slower vaulters who have very good co-ordination.

(*c*) This style, like the fly away, demands a two handed push, but differs in the fact that after the jack knife action has been completed, one hand (the lower one) usually leaves the pole first and is brought over the bar ahead of the top hand.

(*d*) Care must be taken that this hand does not leave the pole until it has completed its push clear of the bar (Fig. 41).

(*e*) The main danger of this style is that poor timing may prevent the top hand from being brought over the bar.

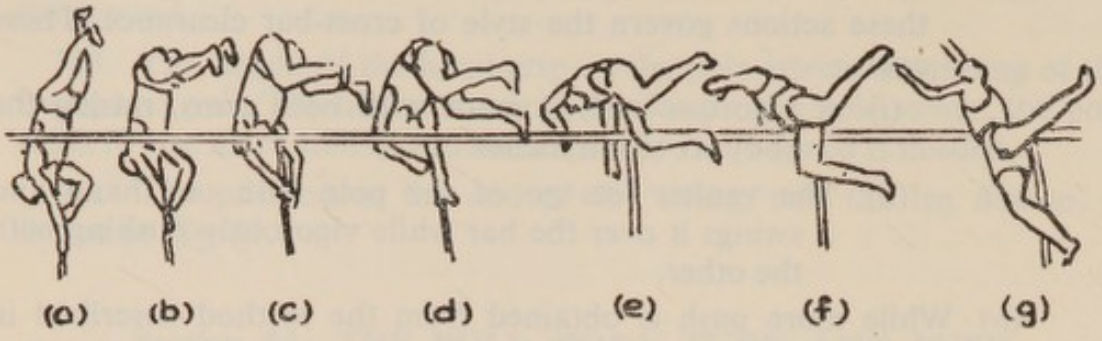


Fig. 41

Landing

391. As soon as the bar is cleared, the vaulter must concentrate on landing. He must be relaxed so that as soon as the feet contact the pit, the body will collapse and roll, thus reducing the shock on the legs.

Section 56 : MISCELLANEOUS

Cross-bar supports

392.(*a*) In pole-vaulting, the cross-bar may be moved forward or backwards by an athlete before he attempts to vault. It must be so placed that the cross-bar coincides with the high point of the vaulting action.

(*b*) Generally, the lower the vault, the farther away is the cross-bar. Whilst it is a matter for each individual athlete, a guide is given as follows.

(i) For a vault of seven feet the bar will be nine inches from the slipway.

(ii) For a vault of 11 feet the bar will be six inches from the slipway.

(iii) For a vault of 13 feet and over, the bar will be directly over the slipway. Only on very rare occasions will it be in front of the slipway.

Main faults

393. The following are the main faults:

(*a*) Too high a hand-hold.

(*b*) Insufficient or excessive speed in the run-up.

(*c*) Failure to bring the hands together.

(*d*) Incorrect take-off.

(*e*) Failure to ' ride ' the pole (usually caused by a premature ' pull-up ').

(*f*) Jerky and ill-timed pull-up.

Conclusion

394.(*a*) It must be remembered that, although each stage of the vault has been described in turn, the vault in practice must be looked upon and performed as one whole unit, each successive stage depending upon its predecessor for good execution.

(*b*) Each of the styles should be tried to find which is best suited to the athlete.

359—399. Reserved.

CHAPTER 14

The Shot

Section 57: GENERAL

Physical type

400. Shot putters can be roughly divided into two categories, namely:

(*a*) *Power type*. These athletes have height, weight and considerable muscular strength. This type of athlete depends upon power from his muscles in the final stages of the putting action.

(*b*) *Speed type*. These athletes are smaller in stature and have less weight than the power type. They depend on acceleration of the body movements.

401. The tall, strong athlete has a decided advantage over the smaller athlete who must make up a loss of weight and height by developing greater speed.

The hold (Fig. 42)

402. The manner of holding the shot is of great importance to the athlete. An easy way of learning how to do this is at first to hold the shot in the left hand (right-handed athlete) and the right hand is then laid loosely on top. The shot is not gripped. The right hand is then turned over so that the ball rests on the base of the fingers which should now be spread fan-wise. It will be observed that the three longest fingers of the hand are behind the shot, the thumb and little finger giving lateral support. The shot lies slightly towards the index finger and thumb—the strongest side of the hand. The heel of the hand should be below the shot, with the wrist flexed.

403. The shot should never be held in the palm, except where the athlete lacks the necessary wrist and finger-strength to hold it correctly, as this will deprive the putt of a valuable wrist and finger flick immedi-

ately prior to release. As the learner becomes more proficient at the movements which accelerate the shot before the arm and hand are used, so he will be able to perch the heavy ball higher up on the fingers, thus improving the final leverage.

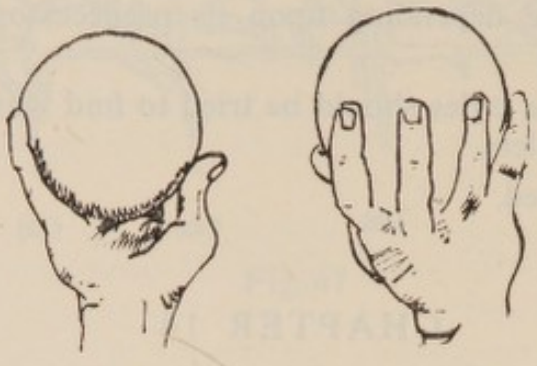


Fig. 42

Section 58 : THE STANDING PUTT

404. An athlete must be perfect in the putt from a stationary position before attempting to incorporate any preliminary movements (the glide, etc). The standing putt is therefore described first.

The action of delivery

405. Standing in the position shown in Fig. 43, the following movements are then performed.

(*a*) A straightening and turning of the right leg, which is co-ordinated with a thrust of the right hip.

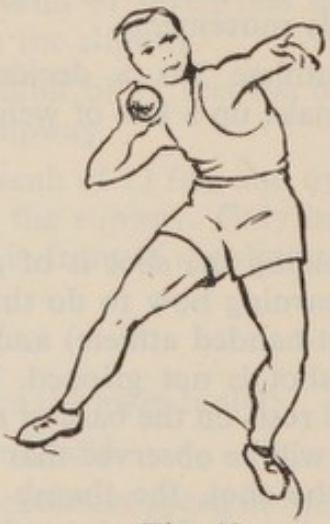


Fig. 43

(*b*) A lateral pull by the muscles on the left side of the body.

(*c*) A first turn of the trunk to the left, dominated by the forward thrust of the hips. The left foot is carried off to the left of the line of throw to permit this.

(*d*) The right arm now starts to drive the shot forward and upward.

(i) Up to this point, the shot is carried on the neck and shoulder, so that the speed and power generated by the body is directed to the shot without any cushioning or shock absorber action of the right arm.

(ii) The elbow of the right arm, having been carried away from the body, is directly behind the shot as the arm comes into action, and in the same plane as the angle of delivery and release.

(*e*) The left elbow is swung strongly to the left and backwards.

(*f*) Great care must be taken when performing (*e*) to ensure that the left shoulder is not allowed to drop or swing directly to the rear. This is closely linked with the position of the left foot.

(i) The whole left side of the body should act as a pivot-point to allow the right shoulder and arm to follow through.

(ii) This action is known as 'The door-closing principle' and enables the athlete to be in contact with the shot over a greater distance.

(*g*) During the stage when the right arm is in action, the body-weight is moved forward over the forward leg, which now assists in the forward and upward drive. Both feet must be kept on the ground while the shot is still in contact with the hand.

The release

406.(*a*) The final movement is the wrist and finger flick which is performed by applying the pressure to the shot by a forward 'snap' of the wrist and a flip of the fingers. This movement must coincide with the final build-up of 'explosive action', and the major force must be directly behind the shot in its line of flight. This action of release will impart a slight backward rotation to the shot.

(*b*) The actual angle of release will vary according to the stature of the athlete and the speed which is given to the shot, the angle being between 37 degrees and 42 degrees.

(*c*) There are two schools of thought concerning the position adopted by the head:

(i) Head inclined to left to permit a less restricted action by the right arm and shoulder.

(ii) Head and eyes kept facing the direction of the putt to aid complete and effective follow-through.

Section 59 : MOVEMENT ACROSS THE CIRCLE

The leg swing

407.(*a*) The type of leg swing employed depends upon the athlete. The free leg may swing in front, beside or behind the supporting leg.

(*b*) The number of these preliminary movements also rests with the putter but should not be more than three.

(*c*) On the last of these swings, as the foot reaches the extreme backward position, the glide or shift begins.

(*d*) During these preliminary movements, the body-weight is carried on the right leg, which is slightly flexed and positioned so that a vertical line dropped from the shot is just to the rear of the right foot.

The glide

408.(*a*) The force of the glide is derived from two sources:

(i) The forward swing or drive of the free leg which follows the completion of the preliminary swing. This is matched by a similar movement with the left elbow.

(ii) Since the body-weight is on the right leg, which is slightly bent, this leg adds to the drive by a moderate push from the thigh, leg and foot.

(*b*) Both of these actions must be combined to give impetus to the body, but great care must be taken to ensure that the movement does not become a jump.

(*c*) During the shift, the shot does not change its position on the shoulder, and must be behind the right foot at the end of the glide. This is brought about by the right foot being brought forward under the hips at the end of its drive.

(*d*) The glide ends with the right foot landing in the centre of the circle with the body moving into the putting or delivery position.

The reverse

409.(*a*) This is the action designed to help the putter to stay in the circle. It is a quick changing of the feet and a bend of the leg which lowers the centre of gravity and makes it easier to control the balance.

(*b*) Great care must be taken that the reverse is not performed while the shot is still in contact with the hand, because all drive from the ground would then be lost. Very big men sometimes find that they do not need to perform the orthodox reverse and, in fact, its performance is a matter of individual taste.

Section 60 : MAIN FAULTS

410. The main faults are all listed under various heads in paras 411 to 415.

In holding the shot

411.(*a*) Resting the shot on the palm of the hand instead of supporting it by the fingers.

(*b*) Perching it too high up on the fingers for the athlete's strength.

(*c*) Having the fingers spread too widely; the three middle fingers, spread comfortably, should always be behind the shot's centre of gravity.

(*d*) Gripping the shot, a fault which can often be traced to the fact that its weight is deprived of the support of the corresponding elbow.

In the preliminary stance and movements

412(*a*) Failing to keep the non-putting elbow well up.

(*b*) Closing the shoulder-blades. They should be open with both elbows slightly in front of the body, thus keeping the shoulder girdle relaxed.

(*c*) Holding the head too erect and too stiffly on the shoulders. It should droop forwards a little, in an effort to assist in the essential relaxation.

(*d*) Looking in the direction of the putt. The head should be turned back a little, nestling the shot against the jaw and into the neck.

(*e*) Leaning forward from the waist. The seat must be kept in, otherwise the driving-power of the legs will be lost.

(*f*) The whole starting position being too tense.

(*g*) The performance of the unduly complicated and exaggerated preliminary leg movements.

(*h*) Lack of concentration (mental and physical).

In the glide

413.(*a*) Hopping too high across the circle. The athlete should shift. across with the rear foot scraping the ground; horizontal movement should be stressed at this stage.

(*b*) The shot wobbles. It must be kept steady against the jaw, resting in the hollow just above the collar-bone.

(*c*) Not keeping the body-weight back over the rear leg.

(*d*) Leaning forwards from the waist; not keeping the seat in.

(*e*) Tensing in the upper-body.

(*f*) Failing to get the rear leg under the body again before the landing. The rear foot must move across the circle at great speed after the initial drive.

(*g*) Withdrawing ('cocking') the rear shoulder supporting the shot. The shoulders must be kept over the line of direction.

(*h*) Looking in the direction of the putt before landing. The eyes should be kept on a mark to the rear of the circle.

(*j*) Failing to lift the 'free' thigh (i.e. the left thigh in a right-handed putter) directly along the direction line in the initial stage of the glide.

(*k*) Exaggerating the thigh lift; the glide is mainly the work of the driving leg.

On landing

414.(*a*) Having the feet incorrectly positioned. There must be enough room for the putt; the left foot must not be too far to the side of the stop-board; the toes and knee of the rear leg must be pointing in the correct direction.

(*b*) Landing with either too much of a rock or not enough.

(*c*) Having too much or not enough sideways trunk-lean.

(*d*) Not landing with the body-weight well back over the rear leg.

(*e*) Bending forward from the waist; the seat must be kept in.

(*f*) Swinging the shot (and supporting shoulder) to the rear.

(*g*) Beginning the rear leg-drive too late; this begins as soon as the rear foot lands.

(*h*) Stamping the front foot down.

(*j*) Failing to have the rear leg sufficiently flexed.

(*k*) Looking in the direction of the putt.

In the putt

415.(*a*) Being in too much of a hurry to bring the arm into the movement; the leg drive and trunk stretch must be performed first.

(*b*) Rotating the trunk too soon; the body-weight must be well over the front leg first.

(*c*) Failing to use the action of the right hip in the effort (right-handed putter). Those using the 'toe back, knee back' rear foot position must be fast and strong to get this hip through, but if it can be achieved from this position, so much the better.

(*d*) Not keeping the right (for right-handed putter) elbow well up during delivery. It must always be in line with the corresponding shoulder at this stage.

(*e*) Falling to the left.

(*f*) Failing to control the non-putting arm. stressing a forcing-back of this arm instead of a driving down of its elbow in an effort to assist in the lifting of the other shoulder.

(*g*) Looking away from the direction of putt, to the left (right-handed athlete).

(*h*) Permitting the left hip to fall back as the right hip comes forwards (right-handed putter).

(*j*) Straightening the front leg too soon, thus forcing the body-weight back.

(*k*) Snatching the rear foot from the ground before the rear leg drive has been completed.

(*l*) Jumping around, with both feet off the ground, while the shot is still in contact with the fingers.

(*m*) Getting no final wrist and finger ' flick '. This can be possibly due to poor timing of previous movements, or to the fact that the shot rolled down into the palm during these movements. It can also be due to a failure to incorporate the action of the right hip in the putt (right-handed athlete) or to lack of front-leg assistance (upward lift) as the arm pushes.

(*n*) Lack of ' follow-through '.

(*o*) Too rapid or too sluggish a reverse for the movements performed.

416—419. Reserved.

CHAPTER 15

The Hammer

Section 61 : GENERAL

Physical type

420. Speed, stamina and muscular co-ordination are essential to the hammer-thrower. Body-weight, although not absolutely essential, is a definite advantage provided the athlete has the ability to control it. This is important because the thrower not only has his own body to control, but he must also control the pull of the hammer, which, at times, may be equivalent to several hundreds of pounds. The hammer-thrower will therefore usually be a man no less than eleven stone in weight, and possessing the required skill to control the movements with precision.

Aim

421. As in all throwing events, the basic aim is to project the missile as far as possible. To do this, the thrower must give the hammer-head maximum velocity at the moment of release. Every movement is made towards this end.

422. Hammer-throwing is an event in which centrifugal force plays a great part. In this respect it is very similar to discus-throwing, but there is one very important difference: in discus-throwing, the arm is used to provide at least a certain amount of force and power. In hammer-throwing, the force is derived from the trunk and legs, the arms being the connecting link between the body and the hammer-head.

Acceleration and timing

423. As in all throwing events, acceleration must be built up from zero to the final ' explosion ' of release. Every movement must be made under control and closely linked with the others to give a complete, smooth, co-ordinated action. While speed is an essential factor, it must not be so great that it cannot be controlled, nor so slow that maximum results are not obtained.

Section 62 : THE THEORY OF THROWING

Axis of rotation

424.(*a*) The centre of rotation is a governing factor in hammer-throwing, and ideally should be the trunk of the thrower. This however, is very seldom attained, but the athlete must try to bring the centre of rotation as near the body as possible.

(*b*) For perfection, this axis, and therefore the body, must be upright and the spin perfectly true. Any jerky movement which disturbs the axis, slows the speed of rotation. The thrower's object is to control the axis, which in turn governs the hammer-head, and ensures a smooth increase in speed of rotation.

Rotational force

425. It is an elementary mechanical principle that, to cause a moving object to accelerate, more force must be applied to that object. In hammer-throwing, this force must be created by the ' hip-leading action ' of the body whilst turning, and must be transferred to the hammer-head through the tensed lateral muscles, the shoulders and arms. The force developed in this manner is called rotational or centrifugal force. Section 65 should be read in conjunction with this paragraph.

Gravitational impulse

426. To obtain maximum distance, the hammer must be released at an angle to the ground. The plane of rotation of the hammer must therefore be at an angle to the horizontal, the path taken by the hammer-head having a high-point and a low-point.

When the hammer is travelling upwards towards the high point, the force of gravity will pull against it and slightly decrease its speed. During its downward path, gravitational pull will assist its speed. The thrower aids this action by flexing his left leg and pulling strongly with his arms when the hammer is travelling towards its lowest point (Fig. 44), and by extending his left leg during its upward path. Thus a ' dipping ' movement is performed by the thrower during the preliminary swings.

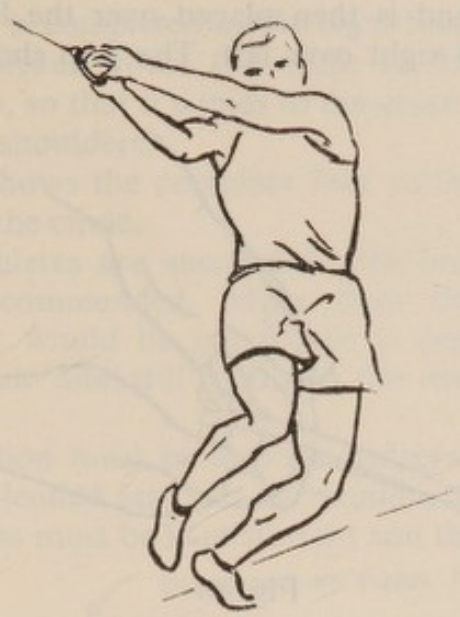


Fig. 44

Section 63 : THE TECHNIQUE OF THROWING

Starting position (Fig. 45)

427. (*a*) The athlete stands in the rear half of the circle with his back to the direction of the throw.

(*b*) The hammer-head is behind and to the right of his right foot with the trunk turned so that the shoulders are towards the low point.

(*c*) The left knee and toe are turned inwards. This position is held only at the start of the first swing.

Fig. 45

The grip (Fig. 46)

428.(*a*) The handle is held so that it rests in the second joint of the fingers of the left hand.

(*b*) The right hand is then placed over the left and the thumbs are crossed right over left. The grip should be fairly loose.

Fig. 46

Preliminary swings

429.(*a*) These swings are made with a wide relaxed movement, with the hammer moving around the body in a plane of about 45 degrees to the horizontal.

(*b*) The hammer is pulled forward, upwards and backwards, keeping the arms straight for as long as possible. The important point here is for the arms and shoulders to follow the hammer to the high point with the arms straight.

(*c*) When a high point is reached, the hammer is allowed to swing behind the body, while the arms are flexed and move in front of the body from left to right with the hands level with the forehead.

(*d*) The shoulders are turned to meet the hammer and the arms are straightened to bring the hammer down to its low point, which, during the swings, is no further than the right foot. This turn of the shoulders enables the setting up of the ' hip-lead ' tensions mentioned in para 425.

(*e*) The preliminary swings should not exceed three in number and should be performed smoothly and with gradual acceleration.

Transition stage

430.(*a*) As the hammer-head passes from its low point, the hammer leads the body, and as it starts on its upward path the foot movement is a pivot performed on the left heel and right toe.

(*b*) This movement brings the body into position for the feet to perform the complete turning movement.

The turns

431.(*a*) The right foot must not be moved from the ground too soon, or body-tension will be lost.

(*b*) The turn is completed by the right foot moving by the shortest and quickest route (i.e. close to the ground) through 360 degrees, so that it comes to the ground with the hips in front of the shoulders.

(*c*) Fig. 47 shows the complete foot pattern of three turns made across the circle.

(*d*) Some athletes are successful with only two turns, but three are recommended. More than three are impracticable, since it would be impossible to control them from within the circle and still maintain the acceleration derived from them.

(*e*) Acceleration must be smooth and gradual, with every movement blended into one harmonious action. During the turns the arms must be kept straight and the body upright.

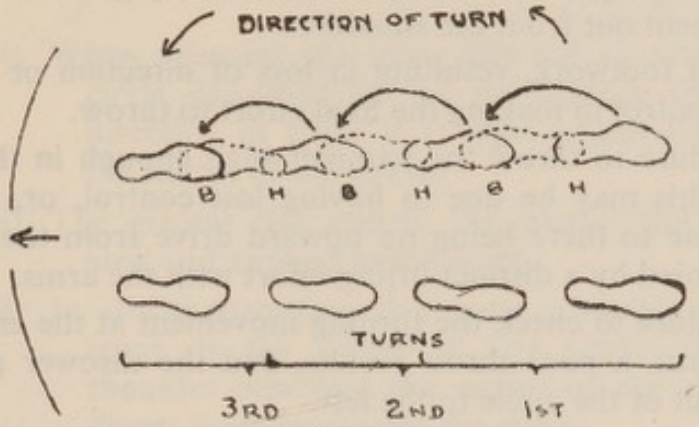


Fig. 47

The delivery (Fig. 48)

432. This is probably the hardest part to time in advanced hammer-throwing.

(*a*) As the hammer-head reaches its low point on the final turn, so the delivery-drive begins.

(*b*) The drive is made by a vigorous extension of the legs and a straightening of the whole body.

(*c*) The arms remain straight and lift the hammer towards its high point, which becomes the point of delivery.

Fig. 48

Section 64: MAIN FAULTS

433. The following are the main faults:

(*a*) Too wide or too narrow a base for the initial stance.

(*b*) Failure to find the correct high and low point.

(*c*) Lifting of the non-pivot foot too early during transition.

(*d*) Hollowing the back at any time during the action.

(*e*) Bending the arms on delivery.

(*f*) Jerky swings, or swinging the hammer in a vertical circle.

(*g*) Allowing the hammer to pull the body round when turning, instead of making the body lead the hammer.

(*h*) Not keeping the eyes on the hammer-head.

(*j*) Cramping the arms, instead of allowing the hammer to pull them out from the shoulders.

(*k*) Bad footwork, resulting in loss of direction or entire loss of control in making the final effort to throw.

(*l*) Failure to throw the hammer high enough in the final effort. This may be due to having lost control, or, more usually, due to there being no upward drive from the legs accompanied by a distinct lifting-effort with the arms.

(*m*) Failure to check the turning movement at the end of the final turn, a poor throw results, and the thrower probably falls out of the circle to the left.

434—438. Reserved.

CHAPTER 16

The Discus

Section 65: GENERAL

Physical type

439. The ideal build for a discus-thrower is the big, powerful athlete who has the ability to move fast. In discus-throwing a long arm gives an advantage, since this allows the discus to travel through a greater arc, consequently generating greater speed.

Centrifugal force

440.(*a*) Discus-throwing is based upon the theory of centrifugal force. This can best be understood by examining what happens when a stone on a piece of string is whirled around. When the stone is whirled round on the string, the pull of the string can be felt on the hand. This is because the force generated is directed outwards from the centre of the circle described by the stone.

(*b*) Fig. 49 illustrates the path of the stone and also shows the result of a sudden release of the stone at any point of the rotation.

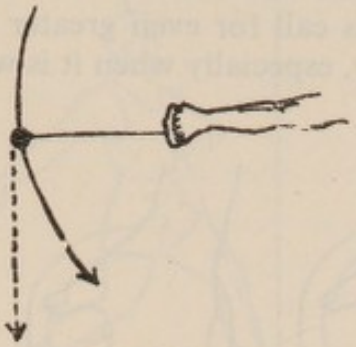


Fig. 49

(i) When released, the stone flies off at a tangent to the circle described by the preliminary swings and its direction of flight is at right angles (90 degrees) to the radius of the circle.

(ii) The greater this radius, the greater the force generated and applied to the stone.

(iii) In discus-throwing, the same principle applies. The trunk is the centre of the circle, the arm and shoulder represent the radius of the circle and the discus itself represents the stone.

Section 66 : THE HANDHOLD

441. The method of holding the discus is important, for the centrifugal force encountered during the turn is considerable. Therefore a strong grip is necessary.

442. At the same time, the handhold must not be so tight that the arm and hand movements are cramped.

443. A beginner must be careful not to use one hold simply because it is used by a good thrower whom he has watched. Above all he should always be sure that the discus lies comfortably in the hand.

444. Fig. 50 shows a suitable handhold for athletes of average hand size.

445. The discus is held lightly and flat against the palm of the hand, with its edge or rim ' nestling ' in the end joints of the fingers which are evenly spaced apart and relaxed.

446. The top or front of the wrist is in line with the first finger, while the thumb lies relaxed, away from the first finger, on the surface of the discus.

447. The base of the thumb roughly covers the brass plate in the centre.

448. Figs. 51 and 52 show two alternative positions where the fingers are not spread.

449. An athlete with small hands or short fingers may have to hold the discus lying on the end lobes of the fingers instead of in the end joints. These methods call for even greater control of the discus owing to the loss of stability, especially when it is wet.

Fig. 50 Fig. 51 Fig. 52

Section 67 : THE THROW, RELEASE AND REVERSE

General

450. An athlete must perfect the throw from a stationary position before he incorporates it with any form of preliminary movements (swings and turns in the circle). The stationary throw is therefore described in this section and the preliminary movements in section 68.

The throw (Figs. 53, 54 and 55)

451. The throwing action starts with the body distributed in such a way that both feet are on the ground and the body-weight is on the rear foot. From this position, the following sequence of movements is performed.

(*a*) A vigorous forward and upward thrust of the right hip.

(*b*) A straightening of the right leg.

(*c*) A rapid twist of the trunk to the front. During this action, the pivot-point must be on the left side of the body to enable the ' door closing principle ' to be brought into effect. This pivot on the left side increases the radius of the circle described by the discus, and allows the hand to stay in contact with the discus over a greater period of time. Consequently more pressure can be applied to the discus because of a more complete ' follow-through '. The pivot side must also be travelling forwards.

(*d*) An explosive 'whip ' of the arm, care being taken that this whip does not allow the arm to precede the shoulders in their turn to the front.

(*e*) A fast, strong wrist action, combined with finger-pressure imparts spin to the discus.

Fig. 53

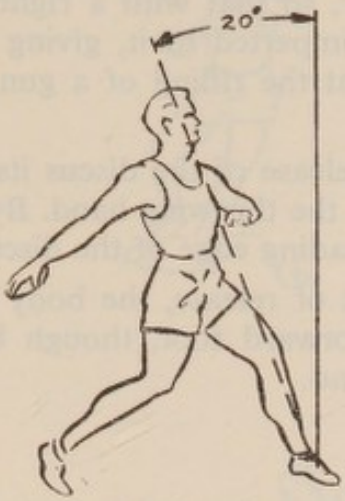


Fig. 54

Fig. 55

The release

452.(*a*) At the moment of release, when all the movements previously described have been completed, the body should be in a position of total ' stretch ' (*see* Fig. 57*j*).

(i) The body-weight should be over the leading foot.

(ii) Both legs should be straight (the drive having taken place).

(iii) The rear leg starting to close up towards the right, body-weight still on the move forwards.

(iv) The line of the shoulders should be parallel to the ground, with the body erect and head facing in the direction of the discus.

(*b*) The angle of release should be at about 30 to 35 degrees to the ground—varying according to conditions of wind, etc. Note that the plane of the discus itself is in the same plane as its angle of release (Fig. 56).

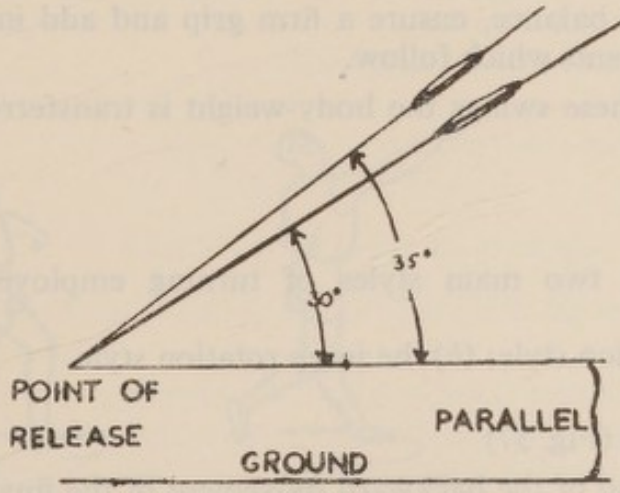


Fig. 56

453.(*a*) The last point of contact between the discus and the hand is the forefinger, so that with a right-handed throw, a clockwise spin is imparted to it, giving stability in flight in the same way that the rifling of a gun barrel gives stability to the shell.

(*b*) The angle of release of the discus itself can be controlled by the thumb of the throwing hand. By pressing down with the thumb, the leading edge of the discus can be brought down.

(*c*) At the moment of release, the body is extended in line with the left or forward foot, though both feet are in contact with the ground.

The reverse

454. The reverse has been covered in para 409 and is performed in exactly the same manner when throwing the discus.

Section 68 : THE PHASES OF A THROW

Stages

455. Whichever style of throw is employed, the action can be divided into the following stages: (*a*) The handhold; (*b*) the stance; (*c*) the preliminary swings; (*d*) the turns; (*e*) the throw; (*f*) the release; (*g*) the reverse.

456. Stages (*a*), (*b*), (*e*), (*f*) and (*g*) of para 455 have been described in previous sections and instructors must refer to those sections when considering the discus-throw as a complete movement. The preliminary swings and the turn are described in paras 457 to 460.

Preliminary swings

457.(*a*) These are movements in which the discus is moved backwards and forward two or three times as a general preparation for the throw.

(*b*) They aid balance, ensure a firm grip and add impetus to the movements which follow.

(*c*) During these swings the body-weight is transferred from foot to foot.

Styles of turn

458. There are two main styles of turning employed in discus-throwing:
(*a*) The pivot rotation style; (*b*) the jump rotation style.

Pivot rotation turn (Fig. 57)

459.(*a*) At the end of the backward movement of the final preliminary swing, the body-weight is taken over the rear foot.

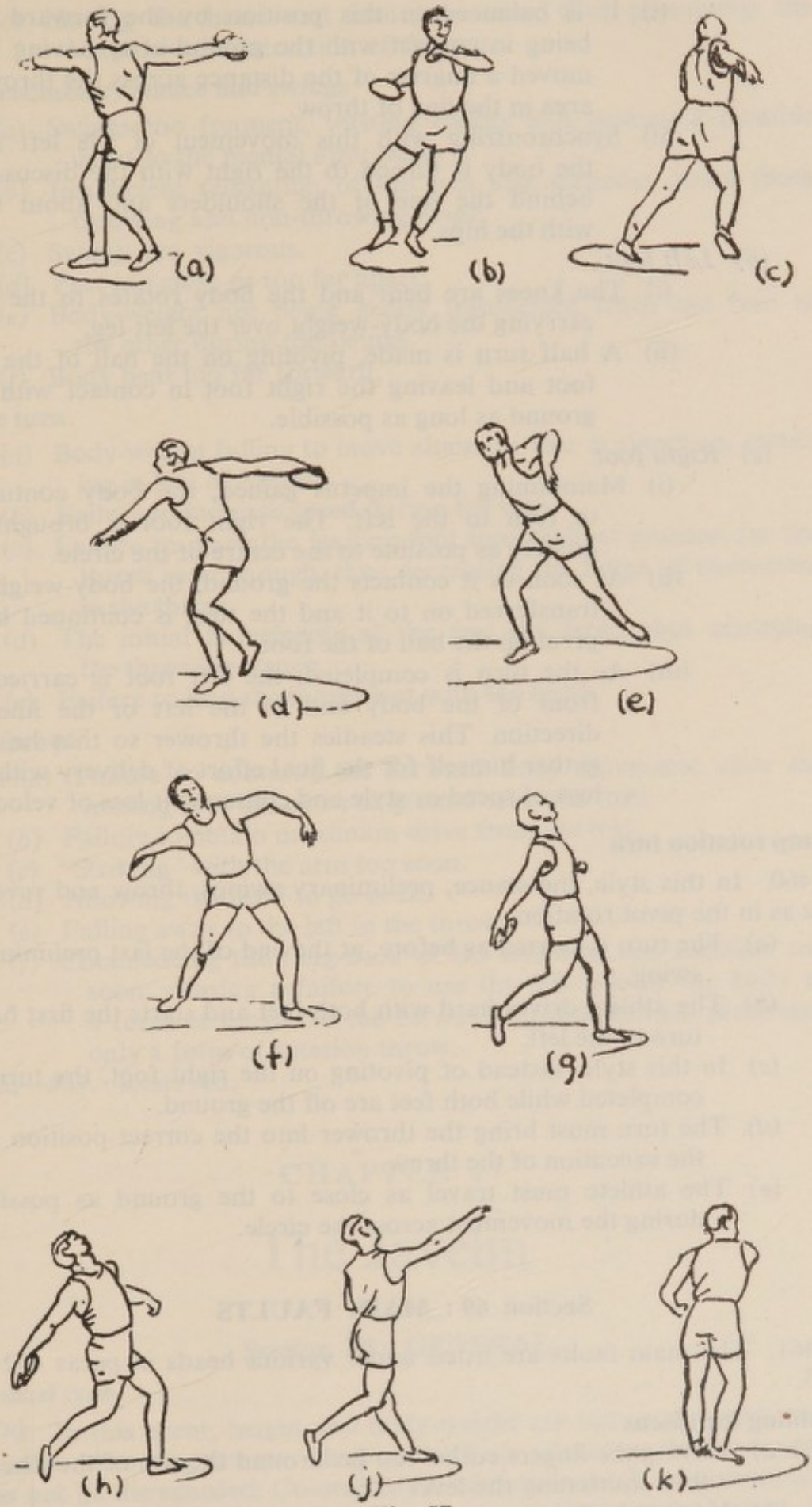


Fig. 57

(i) It is balanced in this position by the forward foot being in contact with the ground after having been moved a quarter of the distance across the throwing area in the line of throw.

(ii) Synchronizing with this movement of the left foot, the body is turned to the right with the discus-arm behind the line of the shoulders and about level with the hips.

(*b*) *Left foot*

(i) The knees are bent and the body rotates to the left, carrying the body-weight over the left leg.

(ii) A half turn is made, pivoting on the ball of the left foot and leaving the right foot in contact with the ground as long as possible.

(*c*) *Right foot*

(i) Maintaining the impetus gained, the body continues to turn to the left. The right foot is brought as quickly as possible to the centre of the circle.

(ii) As soon as it contacts the ground, the body-weight is transferred on to it and the turn is continued by a pivot on the ball of the foot.

(iii) As the turn is completed, the left foot is carried in front of the body and to the left of the line of direction. This steadies the thrower so that he can gather himself for the final effort of delivery without loss of speed or style and consequent loss of velocity.

Jump rotation turn

460. In this style, the stance, preliminary swings, throw and reverse are as in the pivot rotation.

(*a*) The turn is started as before, at the end of the last preliminary swing.

(*b*) The athlete drives hard with both feet and starts the first half-turn to the left.

(*c*) In this style, instead of pivoting on the right foot, the turn is completed while both feet are off the ground.

(*d*) The turn must bring the thrower into the correct position for the execution of the throw.

(*e*) The athlete must travel as close to the ground as possible during the movement across the circle.

Section 69 : MAIN FAULTS

461. The main faults are listed under various heads in paras 462 to 465.

Holding the discus

462.(*a*) Having the fingers curled too far around the rim of the discus, thus shortening the lever.

(*b*) Having the fingers too close together or too far apart.

(*c*) Having the hand and arm too tense, thus preventing the ' explosive ' contraction of the arm.

The preliminary stance and swings

463.(*a*) Swings too frequent, wasting energy and causing a possible upset to the mental approach.

(*b*) Insufficient relaxation of the arm and shoulder girdle (both throwing and non-throwing arm).

(*c*) Swings too vigorous.

(*d*) Feet too close or too far apart.

(*e*) Body-weight not being gently transferred from one foot to the other during the swings.

(*f*) Body bent too far forward.

In the turn

464.(*a*) Body-weight failing to move along the line or direction, resulting in loss of balance.

(*b*) Failure to increase speed during the turn.

(*c*) Failure to place the leading foot into its final position for the throw soon enough, thus decreasing the range of movement in the throw.

(*d*) The initial movements of the feet too large, thus cramping the throwing stance.

(*e*) Failure to lead the movement with the head.

The throw

465.(*a*) Failure to continue the forward body movement after the leading foot has come to ground after the turn.

(*b*) Failure to obtain maximum drive from the legs.

(*c*) ' Striking ' with the arm too soon.

(*d*) Allowing the head to go back.

(*e*) Falling away to the left in the throw.

(*f*) Commencing the fling-back of the left arm and shoulder too soon; causing a failure to use the left side of the body as a form of hinge for the forward movement thus producing only a form of rotation throw.

466—469. Reserved.

CHAPTER 17

The Javelin

Section 70 : GENERAL

Physical type

470. In this event, height and body-weight are not so essential as in the other throwing events. They are still an advantage however, and must not be disregarded. Co-ordination of movement is an outstanding characteristic and speed, while having some importance, must be

coupled with the ability to transfer pure forward speed into force against the javelin.

The grip

471. Figs. 58, 59 and 60 show three methods of holding the javelin.

Fig. 58

Fig. 59

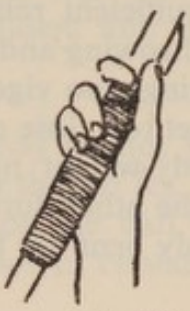


Fig. 60

472. *The Finnish grip* (Fig. 58)

(*a*) The athlete grasps at the rear of the binding with the second finger around the javelin and only just touching the extended thumb.

(*b*) The index finger is in prolongation with the wrist, and slightly curled around the side of the javelin.

(*c*) The javelin lies in the cradle formed by the hand.

(*d*) The force is directed mainly from the second finger and the thumb, while the remaining fingers are used chiefly for directing the javelin.

473. Fig. 59 shows a slight variation of the Finnish grip.

(*a*) The real difference is in the fact that the index finger is the main pulling force, and so is placed against the binding, with the thumb and the remaining fingers curled lightly round the shaft.

(*b*) In this grip, the javelin, while still resting in the 'palm-cradle', forms a greater angle to the wrist and forearm.

474. The grip shown in Fig. 60 allows the javelin to lie in the cradle of the hand as in the Finnish grip.

(*a*) The second finger provides the pushing force, while the index finger is placed along and below the javelin behind the binding.

(*b*) The thumb, as in the other grips, gives lateral support, but the remaining fingers do not pass quite so far around the binding.

475. The all important fact that is applicable to all forms of grip is that all force must be applied along the whole length of the javelin in the direction of the throw. To do this the javelin must be held at or behind the point of balance, never in front of it.

476. The binding may be placed at any distance from the point between 90 and 110 centimetres. While it is easier to throw with the balance well forward, it should be borne in mind that some coaches consider that the further back the point of balance is placed, the more force may be directed along the length of the javelin.

Section 71 : THE CARRY AND APPROACH RUN

The carry

477. Figs. 61, 62 and 63 show the three commonly used methods of carrying the javelin during the approach run and the choice of style depends upon the individual characteristics and method of the thrower.

(*a*) Fig. 61 is usually used with the Finnish or front cross-step style of transition.

(*b*) Fig. 62 is the carry usually used with the hop-step style of transition.

(*c*) Fig. 63 is usually used with the rear cross-step style of transition.

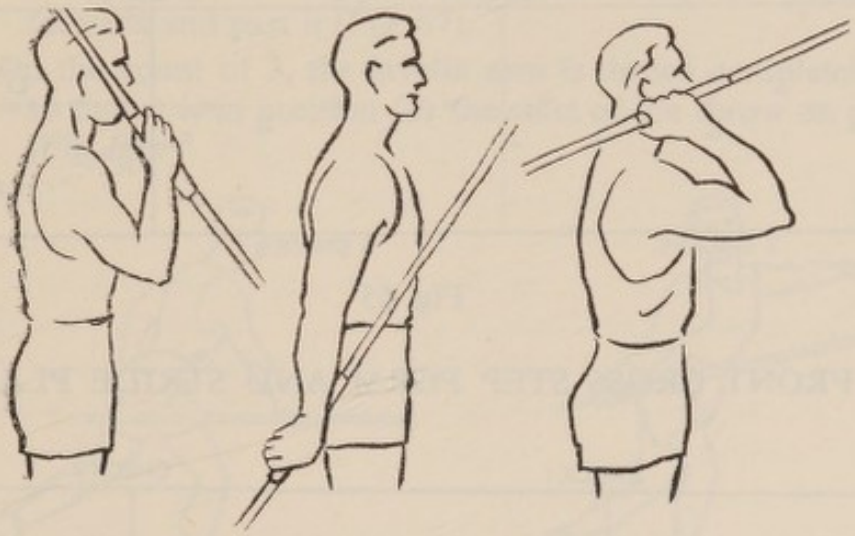


Fig. 61 Fig. 62 Fig. 63

478. The governing factors in the choice of carry are:

(*a*) The carry which will enable the athlete to run fast (maximum controlled speed).

(*b*) A position from which the athlete can transfer the javelin into the throwing position easily with co-ordination and without loss of speed.

Approach run

479. Figs. 64, 65 and 66 show three approach-run plans, one for each style of throw.

(*a*) The first two sections of the approach run and placing of check marks are similar to their counterpart in long jumping, a description of which will be found in section 43.

(*b*) The final part of each plan depicts the foot action of transition and throw for each of the three styles. Since transition and throw are a combined operation they are dealt with under each style.

REAR CROSS STEP FORM AND STRIDE PLAN

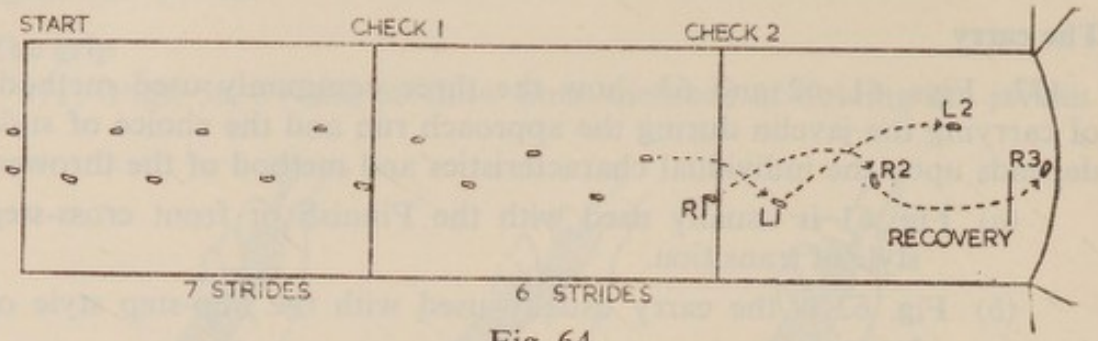


Fig. 64

HOP STEP FORM AND STRIDE PLAN

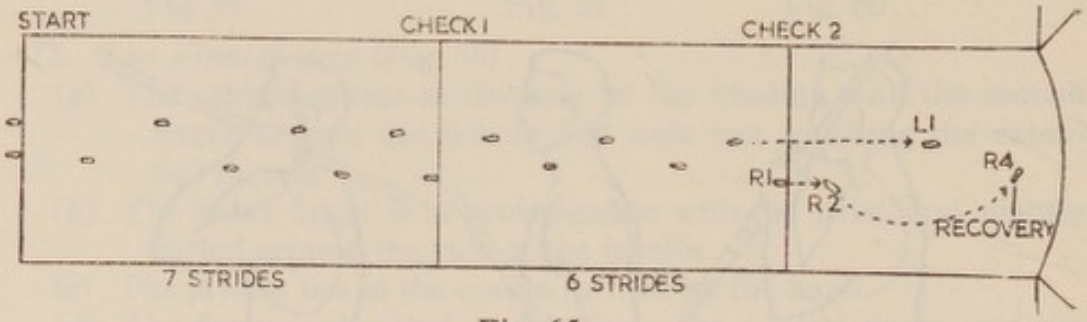


Fig. 65

FRONT CROSS STEP FORM AND STRIDE PLAN

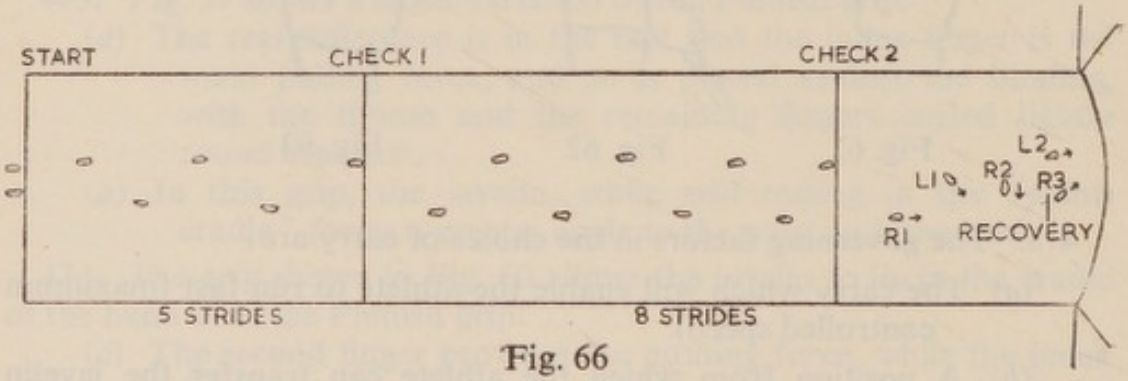


Fig. 66

Section 72 : TRANSITIONAL STRIDES

The Finnish style

480. For the purpose of simplicity, the action is described in two parts :

(*a*) The action of the feet.

(*b*) The action of body and javelin.

481. This style of throw has a four count rhythm.

(*a*) Count **1**, occurs as the right foot reaches the final check mark, the foot facing the line of throw.

(*b*) On the count of **2**, the left foot comes to the front turning slightly to the right.

(*c*) On the count of **3**, the right foot performs a high cross-over step in front of the left. The right foot turns to the right so that it is at a right angle to the line of throw.

(*d*) On the count of **4**, a very long step is made with the left foot, the toe pointing in the direction of the throw. This marks the end of the transition and the start of the actual throwing action.

481. During the transition, the javelin-arm and javelin must be transferred from the carry position to the throwing position. This is performed to the same four counts as that used in the foot movement.

(*a*) On count **1**, the point of the javelin is lifted upwards.

(*b*) On count **2**, the arm is extended forwards and straightened, the javelin is lowered parallel to the ground. At this stage, the javelin should appear to stay still while the body moves forward and past it (Fig. 67).

(*c*) On the count of **3**, the javelin arm is drawn completely back so that it is in position for the start of the throw on count **4** (Fig. 68).

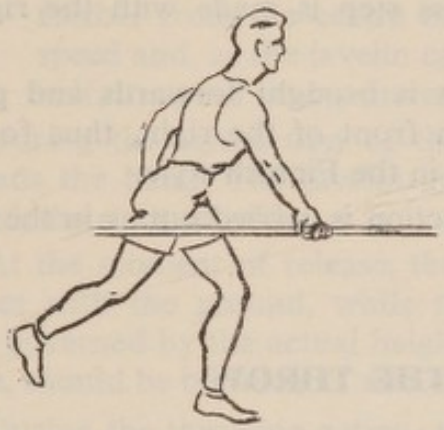


Fig. 67

Fig. 68

The hop-step style

482. This style of action has found great popularity in America, but the general opinion is that it is not as good as the Finnish style.

483. The under-arm carry is usually adopted with this style but this has the disadvantage of ' freezing ' the javelin-arm and not permitting it to help in the build-up of speed during the approach run (controlled opposition).

Technique

484.(a) As the right foot hits the final check mark, a hop is performed. This is combined with a quarter turn of the body.

(*b*) The left foot then performs a movement similar to that of count **4** in the Finnish style. However, in the hop-step, the foot-spread is not so great.

(*c*) The position of the right foot at the end of the hop and all subsequent foot positions is shown in Fig. 65.

(*d*) At the start of the hop, the draw back of the right arm causes the quarter-turn of the body. The hip and arm extension must be timed so that they are concluded at the same time, the body-weight is over the right foot, and the throwing action described under the Finnish method is performed.

(*e*) The right elbow precedes the hand, and the left arm is carried sharply back. As in all styles, the action is an over-the-shoulder whip (not a side-arm swing).

(*f*) In this style the angle of projection is perhaps a little less than in the Finnish style (between 35 and 40 degrees).

The rear cross-step style

485. Once again this is a style favoured by Americans and, like the hop-step style, is not so efficient as the Finnish style.

(*a*) When the right foot hits the final check mark, the foot pattern that follows is shown in Fig. 66.

(*b*) The left foot comes forwards on count **2**, is placed in front of the right foot, and is turned slightly to the right.

(*c*) On count **3**, the rear-cross step is made with the right foot (Fig. 56).

(*d*) On count **4**, the left foot is brought forwards and placed a considerable distance in front of the right, thus forming a wide throwing stance as in the Finnish style.

(*e*) From here the throwing action is carried out as in the Finnish style.

Section 73 : THE THROW

486. The force for the throw is derived from two sources, speed of run and muscular power and control. These must be combined into a smooth co-ordinated action.

487. As the right foot comes to the ground on count **3** of the transition, the throwing action starts. The body-weight must be over the right foot, the body extended to the rear and the right arm straight (Fig. 69).

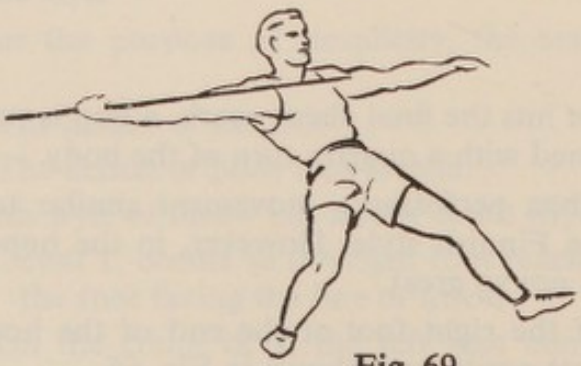


Fig. 69

488. The forward momentum of the body will move the weight forwards towards the left foot so that the speed of the run is imparted to the javelin.

489. Power is also provided in at least two other ways:

(*a*) Since the body-weight is over the right leg, this leg is able to straighten and drive the body forwards. This drive is passed up through the body using the smaller muscles in turn, as in the discus and the shot, so that at the end of the action, the small muscles of wrist and fingers can add distance to the throw.

(*b*) Since the body is hinged at the waist, at the start of the action (when the body is extended over the right leg), it adopts a 'bow' position, with the shoulders well behind the feet and the trunk arched at the waist. The result of this position is a whip-like action of the upper part of the body when the left foot contacts the ground. The lower half of the body decreases in speed since the feet stay momentarily still when in contact with the ground. Because the body as a whole has forward momentum, the top half of the body, being further from the centre of rotation at the feet, increases in speed and, as the javelin can be said to be part of this upper-half, its speed is also increased.

490. During the arm-action of the throw, it is important that the elbow leads the hand. The javelin is released just above, and slightly in front of, the right shoulder.

491. At the moment of release, the javelin should form an angle of 35 degrees with the ground, while the optimum angle of projection, although governed by the actual height from the ground at the moment of release, should be between 41 and 45 degrees.

492. During the throwing action, the javelin must be held correctly, resting in the palm of the hand until the final wrist and finger flick.

493. Leg-drive, hip-drive, shoulder-drive, arm-whip (catapult action), wrist and finger flick, 'follow through' and reverse (count **5**), must be made in one continuous fast movement. Any loss of rhythm and co-ordination will have an adverse effect upon the throw.

Points common to all styles

494.(*a*) It should be noted that a slight body-turn is made as the transition starts, the turn varying with the style used.

(*b*) The left leg is planted a long step ahead of the right on count **4**, and is carried off slightly to the left of the line of throw.

(*c*) The throwing action begins simultaneously with the planting of both feet.

(*d*) At the start of the throw, the body-weight must be over the right leg, which is moderately bent, and the body aligned back from the left foot, the toe of which points straight to the front (Figs. 70 and 71).

Fig. 70

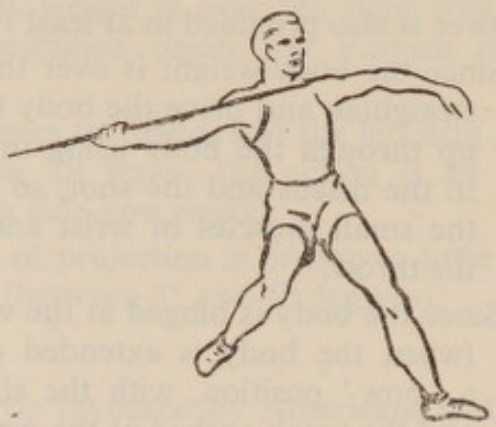


Fig. 71

(*e*) The javelin and left arm are pointing in the same direction. A very slightly flexed right arm is better than one which is locked.

(*f*) The drive is initiated by a forward and upward thrust of the right hip and a forward turn of the trunk. Simultaneously, the right arm is whipped forwards, elbow leading the hand.

(*g*) The javelin must be carried in a straight line, close to the right ear, and is released above and in front of the right shoulder. (At release, the forearm is at an angle of 80 degrees with the upper arm).

(*h*) The approach run is made so that at the start of transition, the thrower is moving at maximum controlled speed. As considerable loss of speed must result from the transition, the cadence of the transition steps may be a little slower than the steps in the approach run.

(*j*) While the body must not decrease in speed during the transition and throw, the javelin must build speed. This is apparent when it is realized that at the moment of release on a throw of over two hundred feet, the javelin will be moving at a speed approximating 60 miles an hour.

(*k*) Finally, the climatic condition affects javelin flight as it does the discus. Figs. 72 and 73 show the correct and incorrect flights.

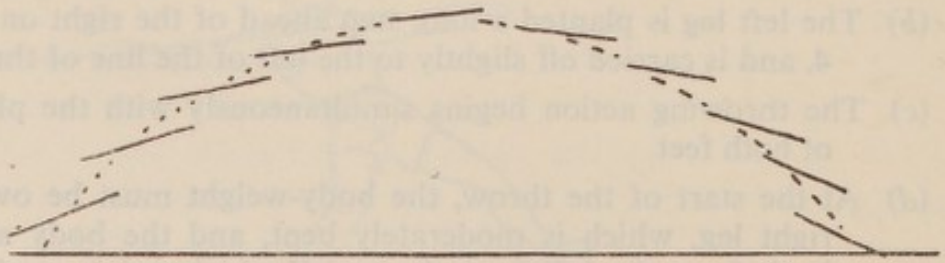


Fig. 72

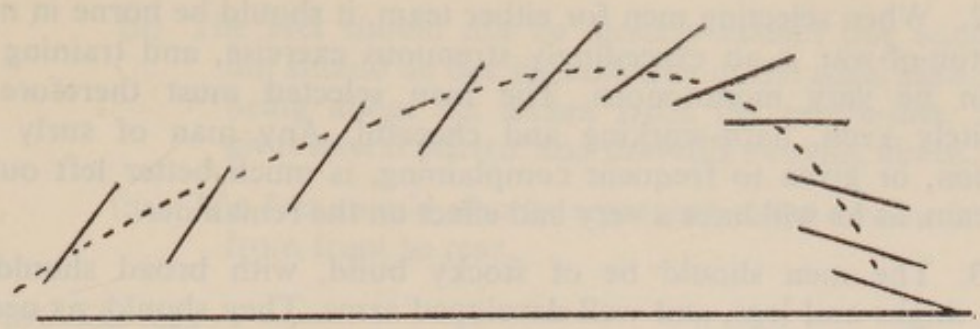


Fig. 73

(i) In Fig 72 the javelin is gaining height rapidly, is presenting minimum surface to wind and air resistance and the tail lift is smoothly performed throughout.

(ii) In Fig. 73 the point is high with the tail low, usually the result of the athlete trying for ' artificial ' height and automatically giving a downward pull to the tail of the javelin, instead of an automatic tail lift.

NOTE. Figs. 72 and 73 are diagrammatical and do not indicate the distance of flight.

Section 74 : MAIN FAULTS

495. The following are the main faults:

(*a*) Run up too fast causing loss of control during the transition period.

(*b*) Throwing-arm not coming right back. Legs, hips and shoulders must complete their work before the arm comes into play.

(*c*) Body not turned fully to the right on the cross-step.

(*d*) Throwing-stance not wide enough.

(*e*) Throwing ' around the elbow '.

(*f*) Lack of ' follow-through ', and dropping of the head.

496—500. Reserved.

CHAPTER 18

Tug-of-War

Section 75 : SELECTION OF MEN TO TRAIN AS A TEAM

501. A tug-of-war team consists of eight men and one coach and there are normally two weight classes, namely:

(*a*) The heavy-weight team, not exceeding 100 stone.

(*b*) The light-weight team, not exceeding 88 stone.

502. When selecting men for either team, it should be borne in mind that tug-of-war is an exceedingly strenuous exercise, and training for it can be very monotonous. The men selected must therefore be definitely keen, hard-working and cheerful. Any man of surly disposition, or given to frequent complaining, is much better left out of the team, as he will have a very bad effect on the remainder.

503. The men should be of stocky build, with broad shoulders, thick thighs and legs, and well-developed arms. They should, as nearly as possible, be all the same height. Above all, they must have plenty of determination and be prepared to put up with any amount of hard work.

504. It is comparatively easy to find a light-weight team in a unit, but it is much more difficult to find a team of eight well-developed men totalling 100 stone. The fat, flabby man is useless, no matter how heavy he may be. If difficulty is experienced in selecting a team, it should be remembered that keenness, strength and stamina are more important than actual weight. It is better to have ten really good men a little under-weight, than to put in substitutes to make up the weight to the required total.

Section 76 : TECHNIQUE

505. **Take up the rope**

(*a*) The men pick up the rope and stand upright with the hands close to the body and arms hanging loosely.

(*b*) The rope should be fairly taut from front to rear but the team should not stiffen themselves in any way. A rigid stance uses up energy which will be required later.

Take the strain (Fig. 74)

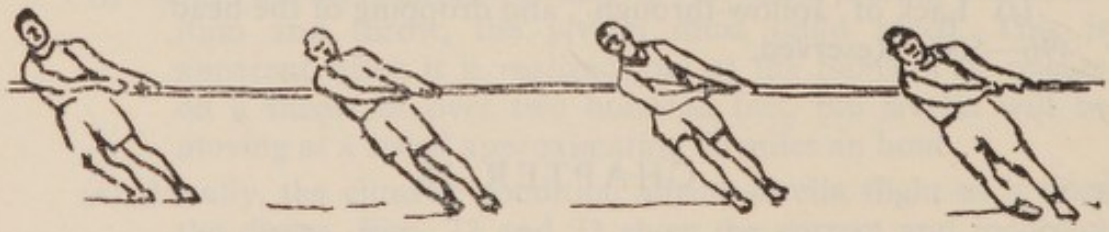


Fig. 74

506. This is the normal pulling position on the rope. The correct position here is of the utmost importance and is described in detail as follows:

(*a*) *The feet*

(i) The sides of both feet must be dug well into the ground. It is impossible to push with the feet flat on the ground, a common fault with novices.

(ii) The feet should not be directly behind one another, but should be one on each side of the rope, each foot being about six inches from the centre-line. This gives lateral control and prevents swaying about.

(iii) The feet should also be separated about twelve inches from front to rear.

(*b*) *The legs*

(i) The leading leg must be perfectly straight. This leg acts as a prop, and the more the opposing team heaves, the more this leg is pulled into the ground, thus increasing its resistance.

(ii) The rear leg is slightly bent, and it is from this leg that the driving-power is mainly produced when the heave is made.

(*c*) *The body*

(i) The lower part of the body must be kept well up to the rope, and the whole body should be in a straight line from the sole of the leading foot to the top of the head. If the body is allowed to sag in the middle, not only is tremendous strain placed upon the back muscles, but any drive from the legs will not be carried through the body and will merely serve to accentuate the sag.

(ii) The upper part of the body should be well over the rope, but in no way lying upon it. A man can exert his full force only through his centre of gravity, which should therefore be kept as close as possible to the rope.

(iii) The rope should be kept well up into the armpit. Care must be taken that the leading shoulder is not allowed to fall away from the rope, and thus prevent a man from pulling along the line of the rope.

(*d*) *Hands and arms.* The hands should grip the rope close together. By having the back of the leading hand on top of the rope, the leading shoulder can be more easily kept over the rope. The leading arm must be kept perfectly straight, and the rear arm as straight as possible consistent with the position of the hand. If the arms are bent the muscles of the arms and shoulders are cramped, and much energy is unnecessarily expended.

(*e*) *The head.* The head should be kept back in prolongation of the line of the body, and not thrown forwards. This gives extra weight on the rope and facilitates breathing.

(*f*) *Main faults* (Fig. 75)

The following are the main faults to be checked:

(i) Feet flat on the ground.

(ii) Body turned to the front and bent forward at the waist (Fig. 75*a*).

(iii) Feet too close or too far apart. The former causes a man to sway about and support himself by means of the rope, the latter causes a man to be 'glued to the ground' and unable to move quickly when required.

(iv) Leading leg bent at the knee.

(v) Arms bent, thus cramping all of the shoulder muscles.

(vi) Leading shoulder not over the rope. This causes a man to pull away from the rope instead of along it (Fig. 75*b*).

(vii) Head pushed forwards. This causes the shoulders to be rounded and body to sag over the rope (Fig. 75*c*).

(viii) Lying on the rope which hinders the man on each side of the offender. Each man must support his own weight.

(ix) Body turned to the front, both legs bent, feet flat on the ground (Fig. 75*a*).

(x) Insufficient body-lean, trunk, head and rear-leg turned too far to the rear (Fig. 75*d*).

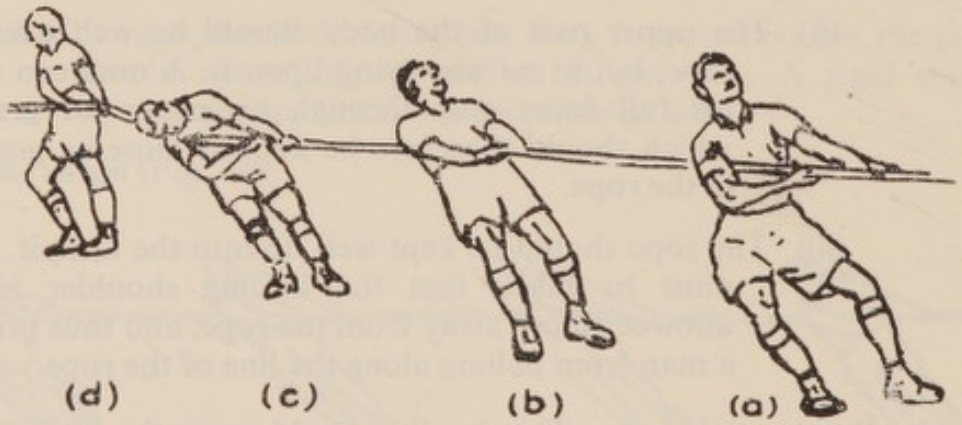


Fig. 75

The heave

507(*a*) Keeping a steady strain on the rope, the angle of the body is lowered to about 35 degrees with the ground and a heave is made by a powerful stretch of the legs and body towards the anchor man.

(*b*) An immediate advantage must be taken of any ground gained, by moving the feet back, keeping them close to the ground.

(*c*) There must be no easing-up either before or after the heave, as any relaxation may allow the opponents to take the offensive.

(*d*) The team must be taught to heave in unison. Some men heave with a quick snatch, others with a slow movement. An average style must be found so that the team heaves with a uniform movement.

e) The heave can be worked up very well on the derrick. It is very important that a team should not relax and give ground after a heave. If, after heaving, the weight on the derrick is seen to drop, it is an indication that the team is not holding what has been gained.

The check

508. This is the counter to heave.

(*a*) As the opposing team heaves, the rope should be lowered slightly and a little extra pressure added with the legs and body.

(*b*) The team must be carefully coached in this, so that they can carry it out quickly, and thus make a distinct check as the opposing team heaves.

Tactics

509.(*a*) On hard ground where there is little opportunity for digging-in, it is best to heave quickly. Having got the opposing team on the move they must be kept moving by a sucession of quick heaves.

(*b*) A team is inclined to slip on hard ground, and it is advisable that a man should know how best to regain his feet. A good method is for the grip to be maintained with the leading hand and the shoulder kept over the rope, while the rear hand is taken off the rope and put on the ground to support the body until such time as the feet have re-gained their grip.

(*c*) When pulling on a soft surface, a team must be prepared for pulls of long duration. A team which is well dug-in is very difficult to move, and constant heaving against such a team will merely tire out the attackers. The best policy is to dig in also and wait until the other team attacks.

The coach

510. The following notes are given for the guidance of coaches.

(*a*) The ideal team is one which can pull without any word of command from the coach. A coach can produce a concerted effort by giving the word or signalling when a heave is to be made, but no one except the men on the rope can tell the exact moment at which the heave should be made. A well-trained team should be able to tell, from the 'feel' of the rope, the exact moment at which to heave, check, etc. It is often advisable to depute to the leading man on the rope, or to the centre man, the responsibility for giving the signal to heave, etc, to the rest of the team.

(*b*) If a coach is giving the orders to heave, etc. it is most important that he places himself where he can be of most use to his own team. He should be close enough to his own team to be able to encourage them but, at the same time, he must be able to watch the opposite team also, in order that he may anticipate their moves and enable his own team to counteract them.

(*c*) It is advisable that a coach should give verbal orders to his men rather than signals. When a man gets tired he is generally more concerned about his own feelings than watching the coach. He may therefore miss a signal and by doing so spoil an otherwise good movement. A spoken word of command on the other hand will have a greater effect on a tired man's brain, and furthermore an encouraging word from the coach goes a long way towards winning a pull.

Section 77 : TRAINING

511. Training for tug-of-war cannot be hurried, and great harm can be done physically and mentally if the team is overworked at the start. Stamina must be built up gradually, and the training in general should start easily and get increasingly more difficult as time goes on. It takes about three to four months to get a team up to the standard required for major competitions.

512. It is suggested that the training period should be divided into two periods:

(*a*) *First period*

(i) The first month should be devoted to strengthening exercises, road-work, and mastering the technique of the rope insofar as the individual is concerned.

(ii) The body should be strengthened generally, and particular attention paid to developing the abdominal, dorsal and heaving muscles.

(iii) Rope climbing, without the use of the legs, is a good exercise for the grip and for the heaving muscles.

(iv) Road-work will develop the legs, as well as getting the men generally fit. It should consist of walks at approximately four miles an hour, carried out in sweater, trousers and boots. The team should frequently walk over heavy ground, e.g. deep sand, plough, etc. to strengthen the ankles.

(v) Slow jogging, with very occasional short sprints, may be included during road-work. It is also good policy to give each man a sheet of newspaper to crumble in each hand as he walks along. It is surprising how this will develop the grip.

(vi) During this first period the men should be taught the technique of the correct positions on the rope, and tested three or four at a time on the derrick (*see* section 76).

(vii) Throughout the whole of the training it is important to weigh the men once a week (in the same kit) and keep a chart of their weights.

(viii) Weight is likely to drop in the first ten days, and may rise slightly afterwards or remain constant. Any sudden drop in weight is a sure indication of 'staleness'.

(ix) 'Staleness' is best avoided by making the training as varied and enjoyable as possible. Amusing games should be interspersed with the more serious work, and training should never be carried out in the nature of a fatigue.

(x) The army system of wrestling forms one excellent variation in training and aids all-round development.

(*b*) *Second period*

(i) After the first month it should be possible to arrange the likely team in the order in which they are going to pull on the rope. From then on, work on the rope should predominate and should be carried out as a team. Use should still be made of the derrick, but more work should be done against live opposition.

(ii) The position of the team on the rope is usually the shorter man in front and the tallest and heaviest man as anchor.

(iii) It is immaterial on which side of the rope a man pulls, as long as he pulls on the side which suits him best.

(iv) At this stage the trainer should aim at perfecting the technique of his team. The previous section on 'technique' aims at giving trainers an idea of the correct positions to be adopted by a team at various phases of a pull.

Section 78: KIT AND APPARATUS

513. The following kit is recommended for training purposes:

(*a*) *Old football vests*—at least two per man to allow for frequent washing. The sleeves must be sufficiently long to protect the inside of the arm from the chafing of the rope.

(*b*) *Old football shorts*—at least two per man.

(*c*) *A high-necked sweater*—for use on road work and in cold weather. A service cardigan and muffler will suffice if a sweater is not available.

(*d*) *Old boots*—as long as the sole are reasonably good and the boots comfortable, their general condition does not matter. For competition work however, really sound boots should be worn. They should be 'broken in' beforehand. Boots must not be 'faked' in any way. The sole, heel and side of heel must be perfectly flush. For service competitions however, the normal issue boot may be worn.

514. Men should be encouraged to change into vests and shorts before doing any rope-work. After training, every man should have a good rub down.

515. The standard size of a tug-of-war rope is 140 feet long and not less than four inches in circumference. The length is immaterial as far as training is concerned, but it is advisable to have a rope of the correct thickness. The rope should be kept as clean as possible, and all grit removed from it.

516. A derrick is useful during training. The weight should be an old coal-box filled with scrap iron, so that the weight can be easily varied. Wire should be used to connect the weight to the tug-of-war rope. The wire should run around the pulley at the top of the derrick, and then around a pulley at the base so that the loop to which the rope is attached is at a height of not more than eighteen inches above the ground.

517—521. Reserved.

PART III: ASSOCIATION FOOTBALL

CHAPTER 19

General Considerations

Section 79: GENERAL

522. Association football is the most widely-played game in Great Britain. Consequently nearly all recruits know something about the game, but a surprisingly large number have little or no playing ability and are therefore inclined to avoid playing when the opportunity arises. Coaching stimulates the interest of non-players or novices, and others are encouraged to become more proficient players. Men should therefore be encouraged to play as much as possible, and not merely to watch while others play. Spectators often give valuable encouragement to a team, but if these spectators are themselves players, their criticisms may often be much more helpful. The aim should be, therefore, more players, less spectators.

523. Football grounds, playing equipment and training facilities are available in most units, and provided the maximum use is made of these facilities, any unit can become ' games and fitness—minded '.

524. All games, especially ball-games, are great morale builders in time of mental stress, e.g. during the waiting period before a battle; before embarking for a long sea-voyage; during convalescence or rehabilitation after illness or wounds.

525. Association football, although not considered a physical training sponsored sport, is of great exercise-value for large numbers of men, and is popular. Games are important factors in the development and maintainance of the physical fitness standard of the Army, and association football forms a valuable supplement to normal physical training lessons. Because of this, APTC instructors are taught to officiate and coach in this sport.

526. Many qualities necessary to a soldier are required in a footballer. Although these qualities are naturally less essential during a game than in battle their development plays an important part in the production of an efficient soldier. The qualities developed include.

(*a*) Keenness to maintain or improve the standard of physical fitness.
(*b*) Speed and co-ordination.
(*c*) Mental alertness and quick reaction.
(*d*) Planning and appreciation of a situation.
(*e*) Endurance and will-power.
(*f*) Judgement and decision.
(*g*) Team spirit.
(*h*) Courage.

Section 80 : OFFICIALS AND COACHES

Training of officials and coaches

527. Physical training instructors should encourage all sports-minded officers and NCOs to assist in the training of novices. They should endeavour to train as many coaches and officials as possible and every effort should be made for officials to become properly qualified, and registered by the Army Football Association, or the Football Association.

528. Coaches and officials may be trained by one or more of the methods suggested in para 10, and also by sending men on :

(*a*) Referees' courses run by the local sub-committee of the Army Football Association Referees Committee.

(*b*) Coaching courses run by the Football Association.

529. Officers in charge of football training are advised to consult the District Officer for Physical Training or Association Football Committee of their district on all problems concerning the training and qualifying of officials.

Section 81 : METHODS OF CONDUCTING TRAINING PERIODS

530. The subjects of organization and methods of conducting ' recruits ' recreational training instructional periods and ' recreational training periods ' are detailed in chapter 1, which must be studied in conjunction with this part. The general details of organization and lesson planning given therein apply equally to association football training periods.

531—535. Reserved.

CHAPTER 20

Coaching Notes for Skills and Techniques

Section 82 : GENERAL

536. In a pamphlet of this size it is impossible to give full details of coaching and training methods. The aim therefore, is to enumerate the essential principles, and to act as a guide and reference to unit officers and instructors who have completed football coaching courses, and to help potential or inexperienced instructors to gain a knowledge of the fundamental skills and their application.

537. Sections 83 to 94 inclusive deal with the various skills or techniques required. Section 96 gives a number of minor coaching games which are supplementary to those given in chapter 2. Selection must be made according to the requirements of the coach or instructor.

Section 83: RUNNING AND AGILITY

538. Running plays a vital part in the game and the ability to run correctly is most essential. Coaching in running must therefore include the following points:

(*a*) Style and co-ordination of movement.
(*b*) Economy of effort.
(*c*) Speed, especially in 'getting of the mark' from standing or walking.
(*d*) Stamina and endurance.
(*e*) Quick stepping.
(*f*) Swerving, dodging and turning.
(*g*) Feinting.
(*h*) Running backwards.

The above points can be covered during track work, skills' practice, field work, minor coaching games, practice games and gymnasium work.

539. Another essential quality required in a football player is agility. This includes the ability to jump from one or both feet, for height and distance.

540. Points to be covered by a coach.

(*a*) Jumping off both feet, from standing and running.
(*b*) Jumping off one foot, from standing and running.
(*c*) Co-ordination and quick-reaction.
(*d*) Muscle power.
(*e*) Stride jumping.
(*f*) Jumping with sliding action.
(*g*) Jumping with turning.
(*h*) Jumping with head movements.
(*j*) Jumping, diving, rolling (for goalkeeper especially).
(*k*) Jumping and landing, break-falling and rolling.

Section 84: GATHERING AND TRAPPING

541. A broad definition of the difference between trapping and gathering is that in trapping, the ball is stopped in a 'trap', even if momentarily, whereas in gathering, the ball is not trapped and need not come to rest.

There are many methods of gathering and trapping a ball, and much practise will be required if proficiency is to be obtained.

542. Men should be taught to gather the ball and move it quickly, or pass, and not merely trap it or kill it ' dead '. The ball must not be allowed to bounce off a player and be out of control.

Gathering can be accomplished with nearly all parts of the legs, front of the body, and front and sides of the head.

Section 85 : GATHERING AND TRAPPING WITH FEET AND LEGS

543. The most important methods of gathering or trapping with the feet and legs are listed in this paragraph together with the main coaching points.

Trapping with the sole of the foot (Fig. 76)

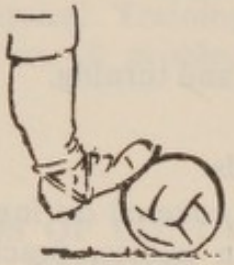


Fig. 76

544.(*a*) Weight bearing foot should be behind where the ball will bounce.

(b) Trapping foot should form an acute angle with the ground—heel down, toe up.

(*c*) Trapping leg should be slightly bent.

(*d*) Ball should be trapped in the angle of foot and ground.

(*e*) Ball should be pushed forward with foot, and player moves off.

Trapping with inside of foot—(dropping ball) (Fig. 77)

Fig. 77

545.(*a*) Weight bearing leg should be slightly bent, the foot approximately in line with the point where the ball will touch the ground.

(*b*) Trapping foot should be turned outwards, knee slightly bent.

(*c*) Inside of trapping leg and foot should form an acute angle with the ground.

(*d*) Ball should be trapped in the angle.

(*e*) Ball should be pushed forwards with the inside of the trapping foot.

Gathering with inside of foot—(flat trajectory or rolling ball) (Fig 78)

Fig. 78

546.(*a*) Early contact should be made with the ball.

(*b*) The trapping foot should be turned outwards, knee slightly bent.

(*c*) The foot should be drawn backwards 'absorbing pace' and slowing down the ball.

(*d*) The ball should then be pushed forwards ready for the player's next move.

Gathering with inside of foot—(flat trajectory or rolling ball) (Fig.78) (Fig. 79)

Fig. 79

547(*a*) The leg should be raised and the ball should be contacted with toe up and heel down.

(*b*) The pace of the ball should be absorbed and it should be deflected to the ground.

Gathering with the inside of foot and moving sideways across the line of flight (Fig. 80)

Fig. 80

548(*a*) The weight bearing foot should be away from the point where the ball will bounce.

(*b*) The trapping leg and inside of the foot should form an acute angle with the ground.

(*c*) The ball is trapped in the angle and 'dragged' rather than pushed sideways in the direction required.

(*d*) The body should lean towards the direction of intended travel.

Gathering with the inside of the foot and moving in the direction of flight (Fig. 81)

Fig. 81

549.(*a*) This is a similar movement to para 548, but the body is pivotted on the weight bearing foot to receive the ball with the shoulders nearly parallel to the line of flight.

(*b*) The body should lean towards the direction of intended travel.

Gathering with the outside of the foot and moving across the line of flight (Fig. 82)

Fig. 82

550.(*a*) The weight bearing foot should be clear of the bouncing point (e.g. right foot).

(*b*) Trapping leg (e.g. left leg) should reach across the body to trap the ball and drag it to the left.

(*c*) The trapping leg should be slightly bent.

(*d*) The foot should be parallel to the ground.

(*e*) The outside of the leg and foot form the trapping-angle.

(*f*) The ball should be ' swept ' across, and the player moves with the ball.

Gathering with the outside of the foot and moving in the direction of the line of flight

551. Similar movement to para 550 except that the body is pivotted on the weight bearing foot, and the body and shoulders are nearly parallel to the line of flight as the ball is gathered.

NOTE. Movements described in paras 548 to 551 are very suitable movements to be applied with a feint and change of line. These should be carefully practised.

Gathering a falling ball with the instep (Fig. 83*a*) **or thigh** (Fig. 83*b*)

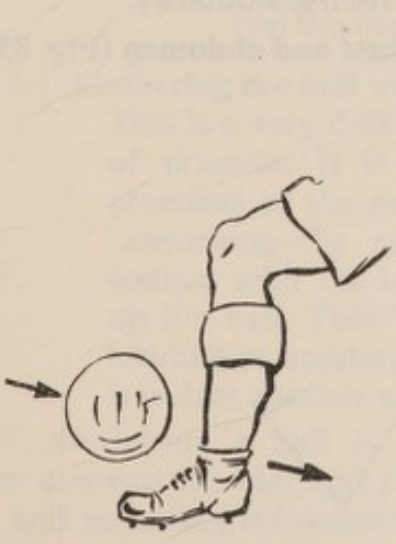


Fig.83(*a*)

Fig. 83(*b*)

552. The gathering-foot or thigh should contact the ball in its line of flight, and should move backwards and downwards along the line of flight, ' absorbing its speed ', and slowing the ball as required.

Gathering a ' crossing ' ball in flight with the side of the foot

553. The inside of the gathering foot should make contact with the ball, ' absorb its speed ', and guide it to the ground.

Trapping dropping ball with both shins (Fig. 84)

554. This movement is a ' safe ' one, but requires space and time.

Fig. 84

Section 86 : GATHERING WITH THE BODY AND THE HEAD

555. In many cases it is not possible to gain control of the ball with the feet and legs, and it may be necessary to gather the ball by means of the body or head. The principle of forming an angle with the body or head to the line of flight, and thus directing the ball in the required direction, must be followed. The ball must not be allowed to bounce off the player. The body or head, when making contact, must move with the flight of the ball, ' absorbing ' its speed and slowing it up as it comes under control.

556. The following methods of gathering with the body and the head are the most important, and should be practised assiduously.

(*a*) **Gathering a ball with the lower chest and abdomen** (Fig. 85)

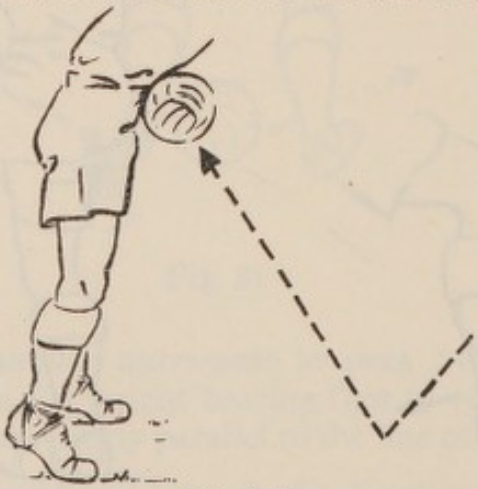


Fig. 85

(i) The flight of the ball should be judged and the player should lean over it.

(ii) The ball should be 'absorbed' and deflected downwards.

(iii) The body should be slightly bent at the waist with the shoulders forward.

(*b*) **Gathering a ball with the chest** (Fig. 86)

Fig. 86

(i) This requires a great deal of practise, and it is difficult to perfect.

(ii) When the chest makes contact with the ball, it should move with the flight of the ball and slow the ball down, at the same time forming a deflecting downwards angle.

(iii) The shoulders may be 'shrugged forwards' to help cup the body to receive ball.

(*c*) **Gathering the ball with the head**

This is a very difficult move and needs an enormous amount of practice. It is very seldom used, and should not be practised in the novice stages of training. The principle of 'absorbing the speed' applies, in that the head makes contact with the ball, and moves with the flight, but slows up the ball. This 'gathering' should not be confused with heading or nodding the ball forwards and downwards, which is in fact another way of trapping.

557. Gathering a ball is usually an individual effort, where the player controls the ball and plays it onwards himself. Practice in trapping and gathering movements where the ball is gathered or deflected by a player for the use of a partner must also be practised.

Section 87 : SKILLS AND GAMES FOR GATHERING OR TRAPPING

558. The following list of suggested skills, practices and minor coaching games is given as a guide. There are many more of these skills and games which can be introduced as and when the occasion demands.

559. *Skills*

(*a*) (*In pairs*). Trapping the ball dead with alternate feet, using the sole, inside, outside and instep of the foot.

(*b*) (*In pairs, facing, several yards apart*). The ball is thrown from partner to partner, who gathers it by allowing the speed of the gathered ball to be broken by a concave movement of the chest.

(*c*) Gathering movements on the run should be practised, followed by a pass in a named direction.

(*d*) (*In pairs, facing, several yards apart*). The ball is thrown to the partner, who traps it with inside, outside, or instep of the foot and immediately returns it to the partner, using opposite foot.

(*e*) Various trapping movements should be practised using the body ' feints '.

(*f*) Trapping and passing the ball in a named direction in one movement should be practised.

(*g*) ' Breasting ' the ball should be practised.

(*h*) Taking pace off the ball should be practised.

(*j*) Trapping the ball with the thighs, followed by an immediate pass in a given direction, should be practised.

560. *Coaching games* for gathering or trapping: (*a*) Corner spry; (*b*) Scotch hand-ball; (*c*) Football rounders; (*d*) Football tennis; (*e*) Team passing; (*f*) Ball passing versus team running.

561. The above points can be covered during:

(*a*) Field work.

(*b*) Skills practice.

(*c*) Gymnasium work including a wide variety of vaulting and groundwork exercises.

(*d*) Weight training for strength and power.

(*e*) Minor coaching games.

(*f*) Practice games.

Section 88 : KICKING

General

562. Kicking is the most important method of propelling the ball and players must be able to kick correctly and equally well with both feet.

There are many methods of kicking to suit varying conditions and requirements and these methods must be practised thoroughly, until the player becomes really proficient in all forms.

The importance of correct and accurate kicking cannot be over-emphasized, and 'blind' and inaccurate kicking must be eliminated right from the beginning of training.

Low trajectory kicking (Fig. 87)

Fig. 87

563.(*a*) Uses: (i) Shooting at goal; (ii) Passing.

(*b*) The following factors govern the general points of low kicking but it must be understood that minor adjustments must be made according to the individual technique and requirements and conditions. The general factors to note are:

(i) The weight bearing foot should be placed alongside the ball—the knee should be slightly bent in running action.

(ii) The kicking leg should be well back, with knee slightly bent, and prepared to swing through.

(iii) The body should be poised and balanced, to counter-balance leg swing.

(iv) Arms and shoulders should swing freely, to counter-balance leg swing.

(v) The eyes should be on the ball.

(vi) As the kicking leg swings forwards, the knee should go forwards over the ball.

(vii) The ankle should be extended and the instep and base of toes should contact the ball.

(viii) The kicking leg 'follows through' and the ball should leave in a low trajectory.

High trajectory kicking (Fig. 88)

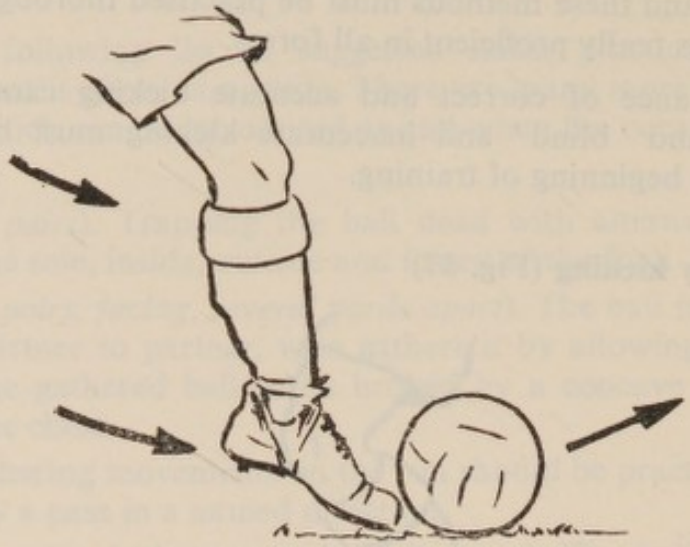


Fig. 88

564.(*a*) Uses: (i) Lobbing pass; (ii) Maximum distance kick.

(*b*) As with the low kick, variations from the normal rule are many, but the following points give a guide to the general principles:

(i) The kicking foot must make contact below the centre of the ball.

(ii) The ankle should be extended directly forwards, making ball contact with the instep and the base of the toes; or it may be extended and slightly turned inwards, making ball contact with the outer aspect of the instep and the base of the toes.

(iii) The ankle flexes as the kick is made, assisting the lift.

(iv) The weight bearing foot must be behind the ball and slightly to one side.

(v) The body leans slightly backwards as the kick is made.

(vi) The hip should be behind the ball.

(vii) The kicking leg swings from the hip and 'follows through'.

(viii) Arms, shoulders and body co-ordinate to afford balance, and to counter-balance the swing of the leg.

(ix) The approach is usually made from a slight angle to the line of flight of the ball, to allow the maximum swing of the leg.

(x) The trajectory angle of the ball on leaving the foot when kicking for distance should be about 45 degrees from the horizontal.

Kicking with the inside of the foot (Fig. 89)

Fig. 89

565. This kick is mostly used in passing because of its accuracy and ease of application, whether the player and ball are stationary or on the move. Great power cannot be applied to this kick owing to the joint and muscle action involved, but reasonably long passes can be achieved with practice.

(*a*) Main uses: (i) Accurate placing of the ball; (ii) Accurate passing.

(*b*) Coaching points are as follows:

(i) The kicking foot should be turned outwards.

(ii) Contact with the ball is made with the inner side of the foot.

(iii) The weight bearing leg should be slightly bent, with the weight largely on the rear of the foot.

(iv) The kicking leg should be slightly bent, and the foot should swing just clear of the ground.

(v) The body should be poised in a slightly crouched position.

(vi) The ball should be 'jabbed' rather than kicked with a swinging leg.

Kicking with the outside of the foot (Fig. 90)

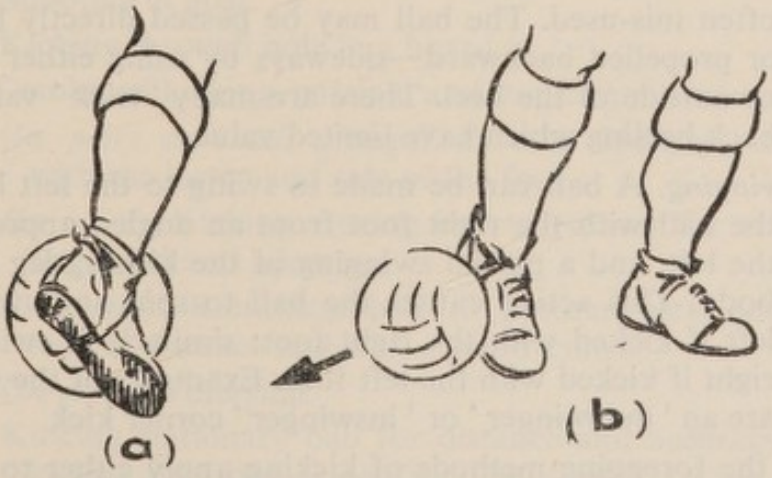


Fig. 90

566. This form of kicking is largely a push with the outer aspect of the forward part of the foot. It can however, be applied in the form of a jab or flick, if the movement of the ball is to be a short one, for example, in case of deluding an opponent or avoiding a tackle.

(*a*) General uses: (i) Passing; (ii) Dribbling; (iii) Deceiving and rounding an opponent; (iv) Avoiding a tackle.

(*b*) Coaching points are as follows:

(i) Weight bearing foot should be behind and a little to one side of the ball.

(ii) The body leans away from the ball if it is played with a comparatively straight leg.

(iii) The body does not lean to any great extent if the ball is jabbed or flicked with an outward rotation of the ankle.

(iv) The ball can actually be ' flicked ' sideways by placing the heel of the kicking boot on the ground near the ball and ' flicking ' sideways with the forward part of the outside of the foot.

Other forms of kicking

567.(*a*) ' *Slicing* '. A deliberate slicing action which propels the ball at a tangent to a circular swinging action of the kicking leg and is occasionally used in deceiving opponents in place kicking and passing.

(*b*) ' *Mashie* ' *or* ' *chip-shot* '. The kicking foot is used to loft the ball in much the same way as a mashie is used in golf. The foot stabs the ground in kicking to get as low as possible under the ball. It is useful for lofting the ball over short distances, but the flight of the ball lacks speed and the use of this kick is rather limited.

(*c*) *Back heeling.* A useful method of passing the ball, but very often mis-used. The ball may be passed directly backwards or propelled backward—sideways by using either the inside or outside of the heel. There are many ' trick ' variations of back heeling which have limited value.

(*d*) *Swinging.* A ball can be made to swing to the left by kicking the ball with the right foot from an angled approach from the left, and a partial swinging of the kicking leg across the body. This action causes the ball to spin and swing to the left if kicked with the right foot; similarly it swings to the right if kicked with the left foot. Examples of the use of this are an ' outswinger ' or ' inswinger ' corner kick.

568. All the foregoing methods of kicking apply either to a stationary or moving ball, but the following methods apply only to a ball which is moving.

Half volleying

569. The half-volley is a kick which is timed to make contact with the ball immediately it has rebounded off the ground. The coaching notes for kicking in the previous paragraphs apply in the main to half-volleying.

Volleying

570. The volley is a kick which is performed when the ball is in flight. The volley is used for long clearances and drives, but it requires an enormous ammount of practice if accuracy is to be obtained in clearance kicks.

The height and trajectory of the ball, and the plane of the kicker, will determine the type of volley which should be made, and practice should consist of volleying the ball received from all angles, towards a set target.

571. Types of volleys are: (*a*) Low trajectory; (*b*) High trajectory; (*c*) Pivoting, or 'kicking on the turn', volley; (*d*) Overhead volley; (*e*) Inside of foot (passing) volley; (*f*) Outside of foot flicking or deflecting volley; (*g*) Scissor kick volley (spectacular but not widely practised).

Jabbing

572. Jabbing, as the name implies, means a quick jab at the ball when on the run. This does not check the speed much. It is a jab with the foot with no follow through and a quick withdrawal of the foot backwards, usually to avoid a tackle.

Training skills and games for kicking

573. The following list of skills or games is not exhaustive, but should give the instructor or coach a guide as to what is required and should be applied to all forms of kicking.

574. *Skills*

(*a*) Kicking at skittles.

(*b*) Kicking at rebound from wall.

(*c*) Kicking in pairs, threes, fours, etc.

(*d*) Shooting at goal.

(*e*) Kicking through hole in a board.

(*f*) Combined kicking, passing, and trapping movements.

(*g*) (*In pairs or small groups*). Practise kicking stationary ball with the instep and side of the foot.

(*h*) (*In pairs*). Kicking moving ball to partner for accuracy, later for speed and accuracy.

(*j*) (*In pairs*). Returning ball to partner with half-volley for height, distance and with ground shots.

(*k*) (*In pairs*). Volleying.

(*l*) Kicking stationary ball for distance and accuracy (ball to be kicked over rope or net from 20 yards).

(*m*) Kicking stationary ball for height and swerve, e.g. corner kick.

(*n*) Free-kicking, lofting ball into target area (circle drawn on ground about 20 yards distant).

(*o*) ' Jab and push ' kick, for accuracy and distance.

(*p*) Pivot kick (volley and half-volley).

(*q*) Kicking for height, direction and timing.

(*r*) Penalty kicks.

(*s*) Kicking on windy days and ' allowing for wind '.

575. Coaching games (*see* section 96).

(*a*) Trapping and passing; (*b*) Passing race; (*c*) Walking football; (*d*) Circle target ball; (*e*) Goal shooting practice; (*f*) Football rounders; (*g*) Moving ball; (*h*) Football tennis.

Section 89 : HEADING

576. Propelling the ball by heading can be a very useful method in certain circumstances, but the standard of heading is far from being as good as it should be. Ability to jump high and head well gives a great advantage over less able players. Heading therefore requires constant practice to strengthen the neck muscles, and improve co-ordination.

577. The following hints on heading may serve as a guide to the main coaching points (Fig. 91).

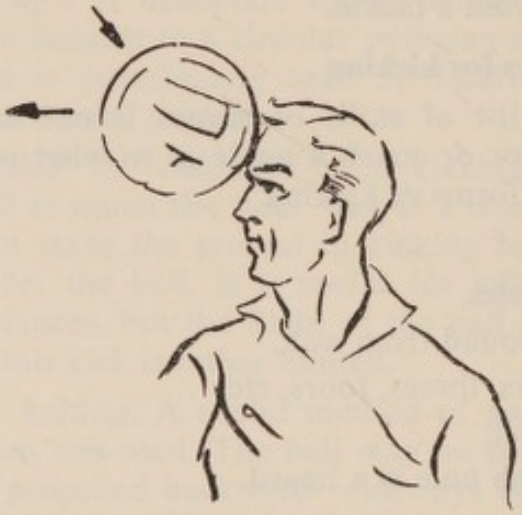


Fig. 91

(*a*) The front of the forehead should be used whenever possible.

(*b*) The eyes should be on the ball.

(*c*) The head should be ' punched ' forwards or sideways with the neck muscles to meet the ball, except in deflecting or gathering.

(*d*) The body should be used to drive the head towards the ball in heading for distance.

(*e*) In jumping, the jump should be vertical and the ball driven by nodding the head and by body drive.

(*f*) The ball should generally be headed downwards or at a low trajectory as a pass, deflection or shot, and not ' ballooned ' up into the air.

(*g*) Both single and double take-offs should be practised.

(*h*) In heading sideways or backwards the head and/or body should be turned to head the ball with the forehead in the required direction.

Skills and games for heading practice

578. The following skills and minor coaching games are given as a guide. Details of the games are given in section 7.

579. *Skills*

(*a*) (*In pairs, facing, several yards apart*). The ball is thrown to a partner, who heads it in a named direction.

(*b*) Individual practice in heading the ball for distance and accuracy. (Head the ball over net or rope fixed to stands).

(*c*) (*In pairs*). Partners try to keep the ball in the air for a given number of passes, or for a specified time.

(*d*) (*In pairs*). Jumping to head a high ball thrown by a partner.

(*e*) (*In pairs*). Jumping for height to head a ball which has been thrown by a third man.

(*f*) (*In pairs or threes*). Heading passes should be practised.

(*g*) (*In pairs*). Heading low ball thrown by partner.

(*h*) (*In pairs*). Heading ball thrown by partner into marked area. (Goal mouth, or wall target or circles drawn on the ground).

580. Examples of minor coaching games for heading: (*a*) Volley ball; (*b*) Football tennis; (*c*) Corner spry; (*d*) Scotch handball; (*e*) Circle target ball.

Section 90 : PASSING

581. The aim of a pass, which may be kick, header, or push with the trunk or legs, should be to propel the ball to a partner so that it reaches him at the right height, speed and position for him to make best use of the ball. The pass should be such that it is not intercepted by an opposing player.

The importance of accurate passing is enormous yet, even in top class football, the number of passes that are badly executed shows that not enough attention is given to this vital aspect of the game.

582. The following points give the most important factors:

(*a*) Accuracy is vital.

(*b*) The ball must be passed at a correct height, speed and position.

(*c*) Position of the ' field ' must be quickly assessed before passing.

(*d*) Speed and position of the player receiving the pass must be considered.

(*e*) Players must ' move ' into position after passing, and use ' the open space '.

(*f*) Good passing reduces the need for dribbling and is much quicker in gaining ground if properly carried out.

(*g*) Passes should be as fast as possible, bearing in mind that the ball must be gathered by a partner.

(*h*) Through passes to a player who is running into an open space should be practised.

(*j*) ' Lob ' passes over the heads of opponents should be practised.

Skills and minor coaching games for passing

583. Selection of skills which should be practised.

(*a*) (*In pairs, facing, several yards apart*). Passing a stationary ball to a partner with the inside and outside of the foot.

(*b*) (*In pairs*). At walking speed, short passing should be practised with the inside and outside of the foot. The distance should be gradually increased between partners, until long passing is being practised. Later, it should be done at running speed.

(*c*) The push pass with the inside and outside of the foot should be practised.

(*d*) (*In pairs facing the same direction, several yards apart, one in a forward position*). The forward ' feeding ' pass should be practised. It should be done first at walking speed, later running.

(*e*) (*In pairs, facing the same direction, several yards apart*). Passing the ball to a partner with the instep, walking or running, for a distance of 20 yards should be followed by passing with the inside of the foot for a distance of 10 yards.

(*f*) Passing a moving ball in the same direction should be practised.

(*g*) (*In pairs, facing the same direction, several yards apart*). Passing, with the inside of the left foot, and the outside of the right foot, alternately, should be practised.

(*h*) (*In pairs, facing the same direction, one in a forward position*). Backward pass should be practised.

(*j*) Long ground and air passes should be practised.

(*k*) Passing and dribbling skills should be combined.

(*l*) (*In pairs*). Zig-zag passing movement.

(*m*) (*In pairs*). Pendulum movement.

(*n*) (*In pairs*). Interchange movement.

(*o*) Various passing movements in threes, fours and fives.

584. The following are minor games which afford variety to training, and which develope passing skills: (*a*) Various forms of relay races; (*b*) Passing race; (*c*) Walking football; (*d*) Wheel relay; (*e*) Corner spry; (*f*) Scotch handball; (*g*) Team passing; (*h*) Ball passing versus team running; (*j*) Football rounders; (*k*) Moving ball.

Section 91 : DRIBBLING

585. Dribbling plays an important part in the game of football, and the good exponent of the dribble is usually very popular. Novices therefore wish to copy these methods and are prone to place too much emphasis on the real value of dribbling. The tendency to over dribble must be curbed and players must be taught to realize that an opponent can be more easily beaten by an effective pass than by an attempt to dribble round him.

586. Dribbling takes the form of propelling the ball in short taps from one foot to the other, both with the inside and outside of the feet.

587. Running with the ball and dribbling practice must play a large part in training. Weaving, swerving and feinting movements (usually called ' selling the dummy ') must be encouraged and developed, and players should be taught to change pace, to side step and to keep the ball as if ' on a string attached to their feet '.

588. Coaching points to note:

(*a*) The ball should be held close and under control.

(*b*) Both the inside and the outside of both feet should be used.

(*c*) The ball should be tapped and pushed rather than kicked.

(*d*) The eyes should be kept on the ball—with brief glances to assess the situation of the ' field '.

(*e*) Swerves and feints must be purposeful and draw opponents.

(*f*) The dribble should normally be in the shortest path of travel.

(*g*) Over-dribbling must be stamped out; many players over dribble and only pass when in danger of losing the ball.

(*h*) Deception of opponents is more effective than attempting to out-run them with the ball.

(*j*) Dribbling skills must be practised against live opposition as often as possible, and live opponents should react and test the quality of feints and swerves.

(*k*) Speed, quick reaction, quick acceleration and side stepping are essentials.

Skills and minor coaching games for dribbling

589. The following dribbling skills form a useful basis for training of novices, but it is stressed that really effective dribbling practice should be against live opposition.

Skills

(*a*) Dribbling the ball close to the foot with the inside, or instep of the foot. This should be done first at walking speed, later running.

(*b*) (*In pairs, facing, several yards apart*). The ball should be dribbled forward round the partner and back to the starting position followed by passing the ball forwards to the partner, who repeats the practice.

(*c*) Dribbling the ball around a prescribed course (circle or square) keeping the ball as near the edge of the course as possible.

(*d*) (*In pairs, facing the same direction, several yards apart*). Dribbling the ball forward with the inside and outside of the feet, passing and changing places each 25 yards or so.

(*e*) (*In pairs, facing same direction, several yards apart*). Dribbling the ball forward with the inside and outside of the feet, passing and changing places every few yards.

(*f*) (*In pairs, facing, several yards apart*). Dribbling the ball forward between partners legs, and returning to starting position, followed by passing the ball forward to partner who repeats the practice.

(*g*) Dribbling the ball in and out along a line of obstacles. (Cricket stumps or indian clubs).

(*h*) Dribbling the ball along a straight line, introducing body swerve and feinting movements of the foot.

(*j*) Combined dribbling and passing skills.

591. Selection of minor coaching games which help to develop dribbling skills: (*a*) Dribbling relays of many varieties; (*b*) Passing race; (*c*) Wheel relay; (*d*) Ball passing versus team running; (*e*) Scotch handball; (*f*) Football rounders; (*g*) Team passing.

Section 92 : THE TACKLE

592. The subject of tackling must include the defensive aspects of interception of passes and shoulder charging, and every player in a team must learn how to tackle properly. Tackling practice can cause a number of injuries, so it should be carried out on soft ground and when men are not fatigued. Short periods of practice are often better than long periods carried out at rare intervals.

593. Tackles may be of many different types or combination of types according to circumstances, but the following methods are given as the most effective guide to instructors.

(*a*) **The block tackle from the front** (Fig. 92)

Fig. 92

(*b*) **The block tackle approaching from the side** (Fig. 93)

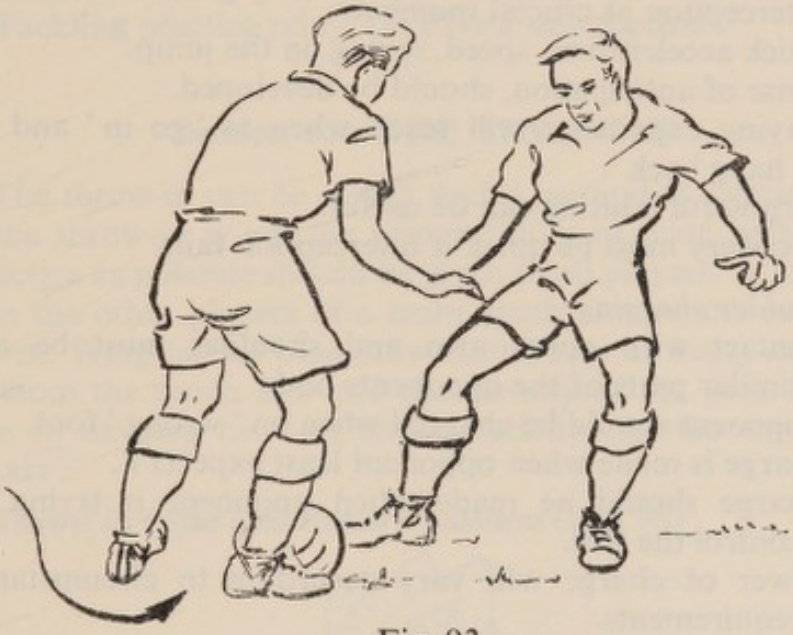


Fig. 93

(*c*) **The sliding tackle** (Fig. 94)

Fig. 94

(*d*) **The shoulder charge** (Fig. 95)

Fig. 95

Coaching points

594. *Interception*

(*a*) Assessment of positions on the field.
(*b*) Interception at crucial moment.
(*c*) Quick acceleration, speed, spring on the jump.
(*d*) Sense of anticipation, should be developed.
(*e*) Playing experience will teach when to ' go in ' and when to ' hang back '.
(*f*) Purposeful feinting can be useful.
(*g*) Recovery must be quick if interception fails.

595. *Shoulder charging*

(*a*) Contact with upper arm and shoulder must be made on similar parts of the opponents body.
(*b*) Opponent should be charged when on ' wrong ' foot.
(*c*) Charge is made when opponent least expects it.
(*d*) Charge should be made when opponent is trying hard to control the ball.
(*e*) Power of charge will vary according to circumstances and requirements.
(*f*) Charges must be fair and not infringe the rules.
(*g*) Rules must be thoroughly understood.

596. *Tackling*

(*a*) Timing very important, indeed.
(*b*) Assessment of field positions of other players.
(*c*) Weight should be behind tackle where possible.
(*d*) Determination and tenacity are important qualities.
(*e*) Feints by tackler and tackled player must be practised.
(*f*) Quick acceleration and quick reaction.
(*g*) Recovery after unsuccessful tackle.
(*h*) Intention should be clear on what to do after gaining the ball.
(*j*) Rash tackles must be avoided.

(*k*) Tackler should keep between attacker and goal if possible
(*l*) Unfair tackles must not be allowed at any time.
(*m*) Rules must be thoroughly understood.

Skills and minor coaching games for tackling

597. Examples of skills are as follows:

(*a*) (*In pairs*). Both tackle simultaneously from pace away from ball.
(*b*) (*In pairs*). Each man trying to gain and keep possession of the ball.
(*c*) (*In threes*). One man trying to get possession of the ball while the other two pass and dribble.
(*d*) (*In pairs*). Charging with the shoulder, at the same time trying to get possession of the ball.
(*e*) (*In pairs*). Block tackle should be practised.
(*f*) Tackling from side should be practised.
(*g*) Tackling from back should be practised.
(*h*) (*In pairs*). Sliding tackle should be practised.
(*j*) (*In pairs*). Initial block position over the ball (feeling the position and resistance).

598. Minor coaching games: (*a*) Walking football; (*b*) Team tackling; (*c*) Tackling practice relay; (*d*) Five a side football.

Section 93: THE THROW-IN

599. The throw-in can be a very useful method of starting an attack and, as the throw-in is not the responsibility of wing halves alone, as much practice as possible should be given to all players. A long throw-in pass gives the other players of a team much more room to manoeuvre and play in. Wing halves especially should aim at being able to throw the ball from the touch line into the vicinity of the goal. Each player will have to develop his best natural ability but the commencement methods are:

600. **Throw in from a stationary position** (Fig. 96)

Fig. 96

601. **Coaching points**

(*a*) Feet should be short astride, both feet level, or one slightly in advance of the other.
(*b*) There should be a slight bend of the knees as the ball is brought back over the head.
(*c*) Body and head should be held backwards.
(*d*) There should be a whipping action of the body and a straightening of the knees with drive.
(*e*) Both hands are used to propel the ball; arms are stretched to the maximum; fingers giving the final push.
(*f*) Co-ordination is essential.
(*g*) There must be correct trajectory of the ball.
(*h*) Rules must be fully understood.

602. **Throw from run** (Fig. 97)

Fig. 97

603. Coaching points are similar to those in para 600 except that:

(*a*) The legs should be well apart from front to rear.
(*b*) The body should be arched backwards well over the rear leg.
(*c*) Powerful drives come mainly from the rear leg.
(*d*) There is a long powerful body whip.
(*e*) Run up should be used effectively.

Skills and minor games

604. Selection of skills..

(*a*) Throw in for accuracy, at target of some sort.
(*b*) Throw in for height and distance into circle over net, etc.
(*c*) Throw in with light medium ball for strength.
(*d*) Weight training or medicine ball exercises for developing specific muscle groups.
(*e*) Most practice with ball or light medicine ball.

605. Minor coaching games: (*a*) Volley ball; (*b*) Football rounders; (*c*) Scotch handball; (*d*) Corner spry; (*e*) Various ball passing games (passing by ' throw-in ' method).

Section 94: GOAL KEEPING SKILLS

606. Goalkeeping skills vary greatly from those required in other team members, as the main skill of goalkeeping is the ability to judge the flight of a ball, and to clutch it safely. The goalkeeper must, therefore, concentrate on the following points in developing skills:

(*a*) Development of all-round agility by exercise.
(*b*) Development of all-round strength, especially in shoulders, arms and hands by suitable exercises.
(*c*) Clutching a ball in many different ways and receiving it from various angles.
(*d*) Body and legs behind hands whenever possible, as a safety measure.
(*e*) Anticipation of probable movement of opposing players.
(*f*) Practising in goal on all possible occasions to get used to judging distances.
(*g*) Throwing pass practice.
(*h*) Punching practice.
(*j*) Kicking practice.

Methods of catching and clutching

607. **Low ball** (Figs. 98 (*a*) (*b*) and (*c*))

Fig. 98

608. **Waist high** (Fig. 99)

Fig. 99

609. **Chest high** (Figs 100 (*a*) and (*b*))

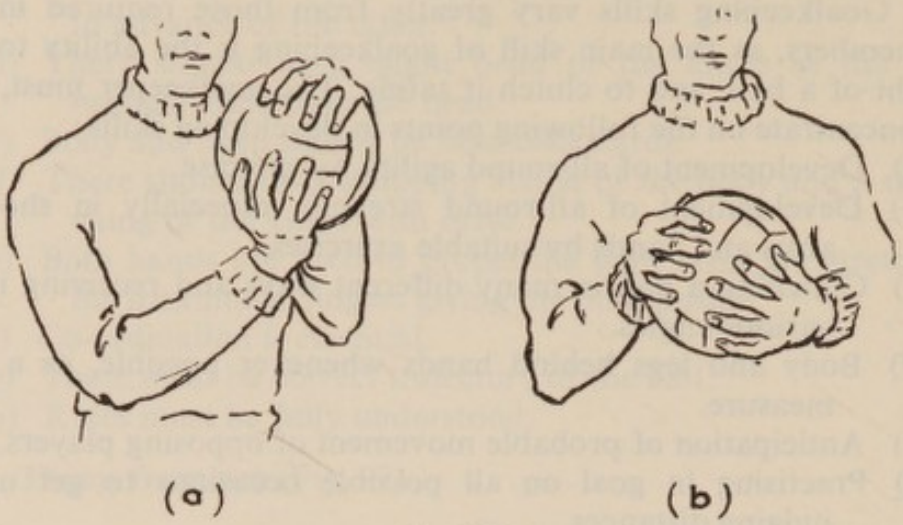


Fig. 100

NOTE. Method 100(*b*) is recommended in diving or lying on the ground.

610. **High ball** (if necessary bringing down to clutching position as in Fig. 101).

Fig. 101

611. **Deflecting a high ball**

This should always be done with the palm of the hand or hands, the wrist being turned to deflect or push the ball over the bar. Deflection is an emergency measure when the goalkeeper can only just reach the ball, or when he is being crowded, and it would be very unsafe to attempt to catch the ball.

612. **Punching the ball**

Punching a ball is another emergency measure when it would be very unsafe to try and catch the ball. Punching is more accurate when both hands are used but can be very useful when carried out properly with one hand. Training in correct punching action is necessary to prevent wrist and knuckle injuries.

613. **Smothering the ball**

When the goalkeeper goes to ground with the ball when closely pressed he should smother the ball by clutching it to his body and 'curling up' on the ball. On getting to his feet, he should remain crouched, and dodge opposing players until he can clear the ball.

614. **Throwing the ball**

The ball is generally thrown by holding it with one hand, fingers extended and the ball against the wrist. The ball is 'bowled' with a straight arm, or thrown with a bent arm as in basket ball. The ball can also be rolled or lobbed over short distances. All throws must be accurate passes.

Section 95: TRAINING AIDS

Portable practice goals

615. These portable goals are very useful, as they can be moved to any convenient or limited space. They also save wear of playing pitches, where shooting practice is usually carried out in the goal area.

The goals are simply constructed and the following diagram shows an example of one method of construction (Fig. 102).

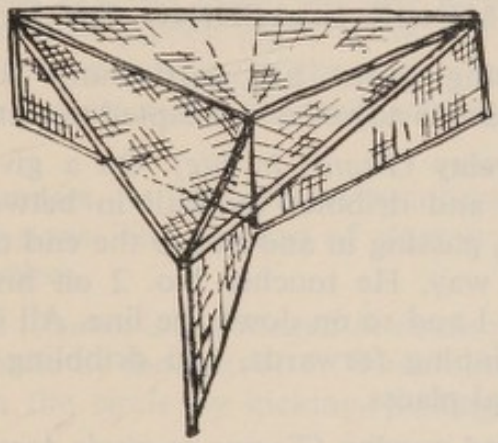


Fig. 102

Magnetic board

616. This consists of a sheet of ferrous metal marked out as a football pitch. Small magnets are coloured to represent players, ball and officials and can be moved about the board as required.

Blanket board

617. This consists of a blanket or piece of similar cloth marked out as a football pitch and fastened on a board or wall.

The players and/or officials are made of coloured discs of coarse sand-paper or lint, the rough side of which sticks to the blanket, and they can easily be moved about.

This type of aid is more easily constructed and much cheaper than the magnetic board.

Portable coaching or officiating model pitch

618. This can be made of a piece of green baize or felt about three by two feet, suitably marked out, and pins with large coloured heads can be used as players and officials. This is particularly useful in teaching small groups and the outfit can be rolled up and carried in the pocket.

Indoor practice net

619. This apparatus consists of a camouflage net hung over a beam and can be used for shooting, heading and other forms of practice.

Tethered ball (for kicking practice in limited space)

620. A ball can be tethered to the ground or floor where space is limited by means of a spike or ring and a piece of thin rope or strong cord in the centre of which has been secured about six feet of strong elastic, the cord is attached to the lace or lace holes of the ball.

621. **Targets:** (*a*) Painted on wall; (*b*) Painted on portable boards; (*c*) Holes cut in boards; (*d*) Skittles; (*e*) Indian clubs.

622. **Nets useful for practice:** (*a*) Volley ball nets or badminton nets; (*b*) Cricket nets for kicking practice.

Section 96: SUPPLEMENTARY LIST OF MINOR COACHING GAMES

623. The following games are particularly suitable for football coaching and they can be adjusted or adapted to suit requirements:

624. **Dribbling relay** (*Teams in file*). On a given signal, the team leader turns about and dribbles the ball in between the second and third file and so on, passing in and out to the end of the line, and back again in the same way. He touches No. 2 on his return, who starts forward round No. 1 and so on down the line. All in turn carry out the same practice, beginning forwards, and dribbling down the line and back to their original places.

625. **Trapping and passing** (*Teams in circle formation. Team leader in centre of circle*). The team leader throws or kicks the ball to each man in turn, who carries out the practice as named, i.e. trapping the ball and passing it back to the team leader, or kicking back with a half-volley.

626. **Passing race** (*Teams in line*). On a given signal, teams move forward over a prescribed course, passing the ball from player to player. The team to take the shortest time over the distance wins.

627. **Football relay** (*Teams in file, one ball to each team*). No. 1 of each team dribbles the ball forwards and places it in a circle marked on the ground at a distance of 20 yards from the file. No. 1 runs back, leaving the ball in the circle, and touches No. 2 in the team, who runs forward and dribbles the ball back to No. 3. No. 3 dribbles the ball forward and places it in the circle. This practice is continued until each player has been in turn.

628. **Walking football.** As for ordinary football except that all movements and activities are performed at walking speed.

629. **Charging** (*Players in small groups, one ball to each group*). Players try to get possession of the ball in their own group by shoulder charging. The player in possession of the ball should try to evade by means of swerving and turning.

630. **Heading volley ball.** As for ordinary volley ball, except that the ball is headed on all occasions.

631. **Tackling practice** (*Relay teams in file, facing, several yards apart*). The team leader one of the team runs forward dribbling the ball towards the opposing team leader, who runs forward and tackles. If successful, he passes the ball back to No. 2 in his team who runs forward dribbling the ball to meet No. 2 of the opposing team, and so on.

632. **Circle target ball** (*Teams are arranged in circle formation with a suitable target in the centre, i.e. stick or cricket stump*). Object of the game is to hit the target with the ball, using the type of kick nominated by the instructor.

Kicking movements should be made with a stationary and moving ball and players should be encouraged to prevent the ball leaving the circle.

633. **Goal shooting practice** (*Several chalk circles are drawn on a wall or on other suitable places. Each circle has a different scoring value*). The team practises shooting at the wall target and tries to score in the circle with the highest value. The team scoring the highest number wins.

634. **Football rounders.** As for ordinary rounders except that the ball is kicked on all occasions. This method of playing rounders introduces various training practices.

635. **Moving ball** (*Teams are arranged in circle formation*). The ball is thrown into the circle by the instructor. The object is to keep the ball on the move within the circle by kicking, passing, or volleying from player to player.

636. **Dribbling race** (*Teams in line*). On a given signal, teams dribble the ball forward over a prescribed course, keeping the ball near the feet.

637. **Team tackling** (*Teams of five a side*). One team tries to score, while the other team concentrates on tackling to prevent them scoring.

638. **Football tennis** (*The game is played with four or two a side on an area marked as for tennis*). The servers may either kick or head the ball over the net, the receivers may return by kicking or heading. The ball may bounce once only on each side of the net before returning. Each side serves the ball five times before the service changes. The first team to score fifteen points wins.

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NOTE

1. **Physical Training in the Army** is the main title of a series of pamphlets which will replace **Basic and Battle Physical Training** Parts I to XII produced between 1944 and 1948.

2. Each pamphlet deals with one or more aspects of physical training and will be issued separately.

WO Code No.	Pamphlet No.	
9467	1	— Principles Instruction on and applicatio . Training.
9468	2	— Recruits P..ysical Training.
9469	3	— Boys Physical Training.
9470	4	— Battle Physical Training.
9471	5	— Allied subjects (Group A) Part 1 — Swimming, Life Saving and methods of crossing water obstacles. Part 2 — Unarmed Combat. Part 3 — Wrestling. Part 4 — Boxing.
9472	6	— Allied Subjects (Group B) Part 1 — Organization of Recreational Training. Part 2 — Athletics. Part 3 — Association Football.
9473	7	— Allied Subjects (Group C) Part 1 — Basket Ball. Part 2 — Gymnastics. Part 3 — Fencing.
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