As was stated earlier dynamic strength, which involves maximum muscular contraction, is not required in the game of badminton. The player is more concerned with explosive strength or power as seen in the smash or in a jump to gain height before a hit. It is also vital in badminton to maintain the strong and powerful activities over the complete length of the game and thus an element of muscular endurance must be included in the training. The chapter is divided into five sections:

1. Safety factors
2. Basic strengthening activities
3. Strength-training circuit
4. Further strength-training activities
5. Badminton-related activities

SAFETY FACTORS
Lifting anything can be dangerous so it is essential to establish a `code of practice' before starting to train for strength, particularly if weight-training. Most of the safety factors are common sense but it is essential to make sure that all the players are thoroughly aware of them before proceeding. A copy of these should be posted on the club notice board. Though specific weight-training is not discussed or explained as a method of training in this book, owing to the necessity for expert guidance on using weights, it is important for those players who do use weights to follow the advice written below.

1. Always train with other people.
2. Thoroughly warm up before handling weights.
3. Always ensure that the weights to be lifted are within your capability.
4. Remember that returning a weight to the floor is a lift in reverse and requires just as much control as lifting it up.
5. Ensure that all the weights are secured to the bar before lifting.
6. When handling weights always have a partner ready to assist if necessary.
Breathe naturally during the exercises. (Weightlifters consider that the best breathing technique is to take a deep breath at the beginning of the contraction, hold it for a few seconds, then exhale slowly during the latter part of the contraction.)

Always lift with a straight back, eyes forward and head up.

Competitive weight-lifting, even in an informal manner, has no place in training for badminton, so never try to "prove your strength" in this way.

Avoid moving those parts of the body not being strengthened in any given exercise.

BASIC STRENGTHENING ACTIVITIES

These activities serve as a useful check before you progress to other forms of strength-training. If any of these activities are difficult then spend several weeks working on one of them alone and only continue when all can be completed with ease. They can all be done in the home but remember to warm up first. The exercises should be performed with a smooth continuous rhythm.

**Press-up (Modified)**

1 WOMEN

Start with the hands shoulder-width apart resting on a sturdy table. Bend the arms until the chest touches the table while keeping the body straight. Push up to starting position.

![Figure 11.1 Modified press-up for women](image)

2. MEN

Proceed as above but using a sturdy chair or bench.

![Figure 11.2 Modified press-up for men](image)
**Sit-up**  
**1 WOMEN**  
Sit on a chair or bench holding the sides of the seat. Lift the legs, hold for a few seconds and return to the starting position. The legs may be bent or straight.

![Figure 11.3 Sit-up for women](image)

**2 MEN**  
Lie on the back with the hands behind the head, legs slightly bent and feet tucked under a heavy piece of furniture. Sit up to touch the head to the knees and return to the start position.

![Figure 11.4 Sit-up for men](image)

**Squat**  
Start in standing position. Squat to rest on haunches and return to the starting position.

![Figure 11.5 Squat](image)

**STRENGTH-TRAINING CIRCUIT**  
A circuit to develop strength with local muscular endurance can be laid but around the edges of a badminton hall so that the playing area is not affected. In clubs where the number of courts is limited the players could take part in the circuit while waiting for a game.
The order of activities should be arranged so that different parts of the body are exercised in turn. The activities listed are suitable for a badminton hall which does not have specialist gymnastic equipment. Certain of them involve small weights and for the strength-training circuit these are provided by filling washing-up-liquid bottles with water (1 kilogram in weight) or sand (about 2 kilograms in weight). One can use a heavier weight by making a barbell from two one-gallon containers and a broom handle (see page 91). Remember to warm up before starting the circuit.

Station 1: Palms forward curl (arms)

Stand upright holding the bottles or barbell resting on the front of the thighs. Lift the weights to the chest, keeping the rest of the body still.

Station 2: Star jump (legs)

Start in the half-squat position. Jump in the air to form a star-shape. Land on the toes and absorb the shock by bending at the knees.
Station 3: Side-bend (trunk)
With feet astride, hold a bottle in the right hand with the left hand on the hip. Bend to the right as far as possible and then bend to the left. Perform 10 repetitions with the bottle in the right hand and then change hands and repeat.

Station 4: Bench-press (arms)
Lie on the back with a barbell or bottle held in each hand resting on the chest. Straighten both hands together so that the weight is pushed up vertically. Return to the chest and repeat.

Station 5: Bench jump (legs)
Start with the feet astride a bench. Jump up to bring both feet on the bench. Jump down to return to the starting position. Do this continuously.
Station 6: Sit-up (stomach)
Start on the back. Raise the arms and legs at the same time to touch the knees with the hands. Return to the lying position. This exercise can also be done by stabilizing the legs and holding a bottle behind the neck with the hands.

Station 7: Straight-arm pullover (arms)
Lie on the back with the bottles resting on the thighs. Lift bottles up and over to teach behind the head while keeping the arms straight. Return to the starting position.

Station 8: Squat-thrust (legs)
This activity is described on page 33. See Figure 4.2.
If a gymnasium is available these exercises can be supplemented by pull-ups (see page 37), dips (page 38) and leg-raises. Dips can be completed between parallel bars ensuring that the body is lowered to make a 90-degree angle at the elbows. The leg-raise is best achieved by hanging from the wall bars and raising the legs until horizontal with the floor.
Organization of the strength-training circuit can be made simple by each player starting with 10 repetitions on each activity. For the dips, pull-ups and leg-raise 5 repetitions is adequate. Allow an adequate rest interval before moving on to the next activity. Progression is achieved by increasing the number of repetitions on each activity and decreasing the rest intervals.
This does not allow for an individually tailored strength-training programme, however. That can be established, as in the circuit in Chapter 8, by counting the maximum number of repetitions that can be completed for each activity in 30 seconds. For example, a player may do 30 sit-ups in the 30 seconds. The maximum number is then halved to establish the training number of repetitions for sit-ups. The player completes the strength-training circuit three times continuously, completing the training number of repetitions for each activity. Periodically the maximum number of repetitions that can be performed is rechecked and new training levels established.
A detailed programme of weight-training requires combinations of the correct number of repetitions and sets. It is best to seek expert advice on weight-training schedules appropriate to the sport of badminton. For example, the optimum combination to develop strength and muscular endurance simultaneously would be 3-4 sets with each set containing 5-6 repetitions. The load for each repetition would be near the maximum load that can be lifted for that set.

**FURTHER STRENGTH-TRAINING ACTIVITIES**

The repetitions for these activities start as before with about 10 and the number can be built up with a progressive decrease in the rest interval between each activity. Another difference with these activities is that heavier weights can be used. However, as we are primarily concerned with strength related to endurance, it is necessary to keep the weights low and a maximum weight of 30lbs is recommended. If the proper weight-training equipment is available in the form of barbells and dumb-bells then these are ideal, but suitable alternatives can be made with little effort.

A one-gallon plastic orange juice container or the equivalent filled with water or sand makes an excellent barbell when attached to either end of a broom handle. Alternatively the one-gallon catering size jam tins filled with cement and with the ends of a broom handle sunk into each one are relatively cheap to make.
All the activities using the bottles that were outlined in the previous section could be completed with a modified barbell or dumb-bell. It is advisable to make up a range of weights and always try every activity with the lightest weight to ensure that it can be completed with good style. Remember to warm up before attempting these activities.

**Chin-high pull**
Bend the knees to grip the bar at shoulder-width apart with the toes underneath the bar, about 10 inches apart. Keep the back straight whilst leaning forwards and ensure that the knuckles face forward. Stand up while pulling the bar in a straight line close to the body until the bar is under the chin. Return to the starting position by lowering the bar to the thighs and then bending the legs to place it on the ground.

![Figure 11.13 Chin-high pull](image)

**Press behind neck**
Stand upright with the bar resting across the back of the neck and shoulders. Extend the arms fully and return to the start.

![Figure 11.14 Press behind neck](image)
Squat
Stand with the feet about 10 inches apart and with the barbell behind the neck on the shoulders. Bend the knees until the knee joint makes an angle of no more than 120 degrees, then drive upwards to a tip-toe position. Lower the heels to the starting position with the feet flat on the floor. A good indication of the correct amount to bend the knees is to imagine that you are sitting on a high stool. In fact, actually to sit down on a high stool is a good safety feature.

Clean and press
The starting position is as in the chin-high pull (see opposite). The body is extended and the bar pulled up close to the body until it rests on top of the chest. The bar is pressed overhead to arm's length. Return to start by lowering the bar to the chest, then to the thighs, and then bending the legs to lower it to the floor.

Bounding
This activity is excellent for developing leg-power. It involves a variety of continuous high stepping and jumping movements:

1. Right-leg hopping.
2. Left-leg hopping.
3. Hopping with emphasis on height not length.
4. Double foot take-off jumping for length.
5. As 4 but emphasis on height.
6. Bunny hops to squat for length.
7. Bunny hops to squat for height.
8. Series of long steps (changing feet) for length.
10 Place light canes between chairs and jump over with double-foot take-off.
11 As for 10 but single-foot take-off.
12 As for 10 and 11, but over a series of canes in a line (at least five). Allow three steps between each cane.
13 As for 12 but allow one step between each cane.
14 As for 12 but allow no steps between each cane.
15 Jump off a chair to the floor and bound immediately over a cane.
16 As for 15 but jump off a higher object such as a table or gymnastics box (maximum height 3 feet).

The number of repetitions for each activity can start as low as 10 but build up progressively.

BADMINTON-RELATED ACTIVITIES

Much of the quality of movement in the game is dependent on strength and power. It is necessary to move, stop and change direction quickly with control and grace; to jump and land with lightness; to make powerful smashes and control the body while playing a delicate touch shot.

The following activities are designed to develop strength and power on the court and at the same time to promote quality of movement. In each activity the player should try to move softly on his feet. Heavy landings and pounding of feet simply indicate a lack of strength and control. The powerful player will move lightly over the floor and appear effortless in his movements. Such quality can be developed with strength if practised from the start. The rule should be `soft feet' in all movement.

Continuous smashing

Feeder and player. The feeder begins in the midcourt and feeds shuttles continuously to the player. This takes some practice before the feeder can regulate the pace with accurate feeding. After 10 smashes change over.

Rebound jump smashing

Perform with or without a feeder. The player stands astride the centre-line in the midcourt. He jumps off two feet to smash the shuttle from the forehand side, lands and jumps back to the centre. Immediately he jumps to the backhand side to perform a round-the-head smash, lands and jumps back to the centre. He repeats this until 10 smashes have been performed.
If a feeder is used then the feeder should serve the shuttles from the centre midcourt to the right and left courts alternately.

**Running jump smash**
Perform with or without a feeder. The player starts in the backhand rear-court corner. He sprints across to the forehand rear-court, leaps and smashes, lands and sprints to the backhand rearcourt, leaps and smashes, lands and sprints to the forehand rearcourt to continue. He performs 10 smashes. Feeder should serve from the centre midcourt.

**Running backward jump smash**
With or without feeder. The player starts in the attacking stance in the midcourt. He pivots round sideways on to the backhand rearcourt, side-steps and leaps backwards to perform a round-the-head smash from the backhand rearcourt; lands and immediately sprints to the midcourt to stop in balance, in the attacking stance, ready to repeat the sequence. He performs 10 repetitions. The feeder should serve from the forehand midcourt.

**Alternate leg-springing**
The player stands on his left foot and springs forwards on to his right foot, lands and pushes off to spring back on to his left foot. With each spring try to increase the distance. Perform 10 jumps.

**Lunge jumps**
The player stands in the attack position with the right leg forwards, knees slightly flexed. He jumps forward to land on both feet in the lunge position then sways back on to the left leg and brings the right leg back to the attack position ready to repeat the lunge-jump. Perform 10 lunge-jumps, each time trying to increase the distance.

**Running lunge jumps**
Repeat as for lunge jumps but sprint several steps before lunge jumping.

**Lunge to kill off the net**
Perform with or without a feeder. Stand on the edge of the forecourt with the rear foot behind the short service-line. Lunge-jump upwards to kill off the net, land and spring back to the starting position. Perform 10 lunge-jumps. The feeder should stand on the short service-line and throw the shuttle just over the net in a darts-throwing action.
Wide squat jump
This exercise helps to develop the ability to move quickly forwards, back-wards or sideways from a defensive stance. Stand with the legs apart in a deep squat position with the trunk upright. Leap forward and backwards 10 times. Leap alternately to the right and left 10 times, each time landing in the deep squat position with the legs wide apart.

Skipping
This is a form of exercise used by many players to develop footwork. It can help to develop the quality of lightness of movement (softness of foot) so necessary for alertness, control and balance. It can also be used to develop leg-power when performing skip-jumps.

1 SKIPPING FOR LIGHTNESS
Skipping is enjoyable if one gets into a rhythm and for this steady rhythmic music is excellent. There are several methods of skipping. One is to skip to 100 turns of the rope and then rest a minute. Repeat this until 1,000 turns have been completed.

A second method is to skip for a certain length of time and rest for an interval. Skip for 5 x 2 minutes with a 1-minute rest interval. The work period can be increased as one becomes fitter. A third method is to skip without a pause for 10 minutes. During the skipping maintain the rhythm and remain light on the feet.

2 SKIPPING FOR POWER
Skip using double-foot rebound jumping as the rope turns. Jump off two feet high in the air and bring the knees quickly up to the chest while turning the rope as many times as possible during the jump, land and rebound to repeat the jump. Try to perform 5 high rebound jumps continuously and build up to 10 jumps before resting.