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## Strength training for sport athletes in India

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### Abstract

Behind any successful athlete or team is a well-prepared coach or management team, who, with their athletes, have carefully plotted their campaign towards success. The quest for sporting excellence requires an understanding of the planning process. This fact sheet guides you through some of the stages you need to address while you are planning for sporting success, regardless of what level of team or athletes you are coaching. Athletic performance is made up of a complex blend of a number of factors. The relative importance of each will depend on the demands of the sport and needs of the individual. One pre-determined factor is genetics. An internationally renowned scientist famously once said "if you want to be an Olympic Champion, choose your parents carefully!" Whilst it is true to say that your genes are established at birth they are, however, also greatly influenced by an athlete's surrounding environment. Physiological gifts are easily squandered without the right balance of training, nutrition, and mental desire.

**Keywords:** sport athletes, Physiological, potential

### Introduction

The role of the coach in the development of athletic potential is very interesting and challenging. It is also a very demanding role because it requires knowledge of all aspects of the athlete's life and the requirements of the sport. With this information, you, as the coach, are in a position to prepare a training program that will assist the athlete to achieve his or her training objectives. The training program will provide the format that will guide the athlete through the proper sequence of development throughout his or her athletic career.

### Strength Training

In any sport the development of whole body strength has become more and more essential to sport coaches whose longevity at their current posts are based on the success of their athletes and their team. The strength programs that these athletes participate in help in the goal of winning two fold. A stronger athlete is a better athlete, and a stronger athlete is a healthier athlete. The ability of an athlete to improve performance, decrease the chance of injury, or decrease the recovery time, if an injury does occur, is extremely important when championships are on the line.

### Developing the Sport Athlete

Our athletes utilize strength training as one of the major pieces of their overall physical development. Unlike power lifters and weightlifters that actually compete in the exercises they train, our athletes have been recruited to play a specific sport/position that utilizes strength training as a way to improve their level of fitness and athletic ability. The position/sport coach works on the specific skills necessary to succeed on the playing field of choice. Exercises that influence mobility are extremely important to the development of athletes. In the strength disciplines most training activities are completed in the linear plane with little or no foot movement (weightlifting is the only discipline where the feet move but is very specific to the "catch" phase of the lifts). Therefore, the choices of movements in training can be narrower in scope. Also, strength athletes do not have the concern of the conditioning aspect in their sports. Specific conditioning demands have a major influence in the strength programs that are developed during the annual plan.

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### Why Do Strength & Conditioning with Young Athletes

- Coaches and parents can instil in their children's good training and conditioning habits that will last a lifetime
- Major sporting characteristics are going to be developed between the ages of 8-13.
- Taking advantage of sensitive periods when the development of a given movement. – You are missing out on sensitive periods of improving these skills for their ultimate sporting success.
- Physical fitness stimulates the development of bones density and ligaments, increasing their ability to withstand stress.

### Why Do Strength & Conditioning with Youth Sports

#### Physical Benefits

- Less chance of injuries
- Gains in muscular strength & endurance
- Increase flexibility
- Increase cardio-respiratory endurance
- Increase lean body mass and decrease body fat
- Enhance the motor fitness skills and sports performance of children.

#### Emotional Benefits

Improve self-esteem and self-confidence  
 Better ability to deal with stress  
 Less anxiety, less tension, and less fatigue

Can help improve the psychosocial well-being of children

### Strength Training for Team Sport Athletes

Strength training programs are now considered an integral part of athlete preparation. There are a number of areas of research that provide support for this. Physical capacities that can be developed through strength training have been shown to differentiate the performance levels of athletes. In Indian football, research has shown that starters and nonstarters can be differentiated by measures of strength and jumping ability. This is similar to research conducted Rules football, where measures of speed and vertical jump performance can delineate between starters and nonstarters. In addition, strength and power measures are different among elite-level rugby league players and sub elite and juniors. This has also been seen in rugby union athletes, in whom force and power measures in jump squats differentiate elite from elite junior-level players, in addition to differentiating between fast and slow athletes.<sup>8</sup> It is important to consider that whereas some measures of strength and power are able to discriminate levels of performance, it appears that some measures may be more useful than others and that this may be sport or position dependent. Given the amount of research that demonstrates the positive impact of strength training on these physical capacities and playing level, it is reasonable to conclude that strength training has positive benefits for an athlete's performance.

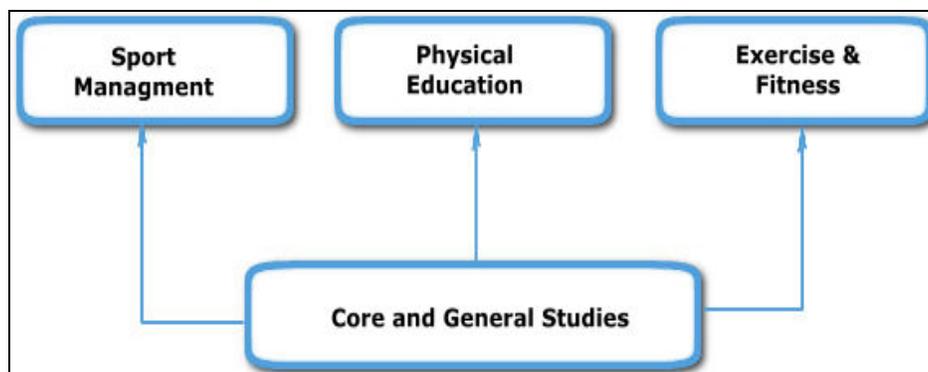


Fig 1: Core and general studies

### Transfer of Strength Training to Athletic Performance

The use of training programs designed to increase underlying strength and power qualities in elite athletes in an attempt to improve athletic performance is commonplace in strength and conditioning. There is a large body of literature that shows that strength training can increase strength, power, vertical jump, speed, and acceleration in a range of different sports. Explosive strength training has been shown to increase maximal sprinting speed and vertical jumping in soccer players, whereas heavy lifting has been shown to improve 5 m acceleration speed and throwing velocity in elite handball players. Strength training in elite handball players increased throwing velocity in addition to other capacities such as vertical jumping and sprinting. This is a common finding across a wide range of team sports. However, the question that remains unanswered in many sports is to what extent these physical capacities and their development contribute to success in terms of improved match performance. There are also issues concerning the extent of transfer that occurs from strength training to these measures of performance. There is some evidence that strength training can improve other more specific motor abilities such as agility. However, this research

is less compelling; with mixed findings on the potential benefits on measures such as change in direction. One of the challenges with this area of research is that there is no clear agreement on which types of measures best reflect these types of capacities.

### Seven Coordination Abilities

#### 1. Balance

- Static Balance- e.g. doing mastered exercises with eyes closed, prolonging the time in a stance
- Dynamic Balance- e.g. running on a balance beam

#### 2. Movement Adequacy: the choice of movements adequate for the task

- e.g. getting through a obstacle course with minimum effort

#### 3. Kinaesthetic Differentiation: the ability to correctly estimate differences in form, distance, timing, and the amount of strength required to perform movements.

- e.g.: kicking or putting a ball at an assigned distance, jumping at assigned distance

**4. Reaction to Signals. Can be sound, sight or touch**

- e.g.: Having kids change directions, making starts and short sprints from various positions

**5. Sense of Rhythm: match movements to a rhythm the athlete hears, sees, or feels**

- e.g.: boxing with a speed bag

**6. Spatial Orientation: the feeling of space**

- e.g.: taking off and landing in various positions, catching a ball in unusual positions

**7. Synchronization of movements: consist of unrelated movements**

- e.g.: One arm making circles while the other arm punches to the front or side.

**Physical Training for the Soldier-Athlete Purpose-driven training**

The purpose of the Army Physical Fitness Test (APFT) is to serve as a tool for unit commanders to assess the fitness and battle readiness of their Soldiers. Although this concept is widely known, as it is read aloud prior to each APFT, the APFT is rarely applied as it was designed. Instead, unit commanders commonly use the APFT to guide unit physical fitness training. Excelling at the APFT has therefore largely become the primary purpose of physical training. As a result, instead of focusing on the unit Mission Essential Task List (METL) and battle readiness as the goal of fitness, unit commanders focus on a limited set of skills: push-ups, sit-ups, and distance running when designing their unit physical training. Units generally have 60 to 90 minutes each day allocated for physical training. Focusing on the mission in the design of fitness training is the most effective use of limited time, provides variety of training, decreases the risk for overuse injuries, and ultimately develops better, stronger warriors.

**Conclusions**

The use of strength training designed to increase underlying strength and power qualities in elite athletes in an attempt to improve athletic performance is common. Although the extent to which qualities of strength and power are important to sports performance may vary depending on the activity, the associations between these qualities and performance have been well documented in the literature. An increasing number of training studies with high-performance athletes are attempting to address questions concerning the role of strength training for improving athlete performance.

Even though there is little doubt that strength training has significant benefits for athletes, it should be remembered that not all training programs are created equal. The program design, specificity, and periodization are critical components that contribute to the overall impact of a strength training program on athletic performance. Well-trained athletes require a greater amount of specificity, individualization, and variation with their strength training programs. Additionally, the challenge in team sports is having to develop physical capacities such as strength and endurance simultaneously to maximize performance.

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