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Prachita Walankar
Assistant Professor, MGM
College of Physiotherapy, Sector-
30, Vashi, Navi Mumbai, India

Josheeta Shetty
Intern, MGM College of
Physiotherapy, Sector-30, Vashi,
Navi Mumbai, India

Corresponding Author:
Prachita Walankar
Assistant Professor, MGM
College of Physiotherapy, Sector-
30, Vashi, Navi Mumbai, India

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Speed, agility and quickness training: A review

Prachita Walankar and Josheeta Shetty

Abstract

Speed, agility and quickness training (SAQ), a type of skill based progressive exercise, helps in the development of the neuromuscular system thus improving motor skills and body function. It is now becoming a popular method of training and is used by physiotherapist, strength and conditioning specialist and many coaches. The primary purpose of the SAQ training is to develop the rate of force production, the response to stimuli, improve the velocity of movement and prevent injuries. It has been proven effective in improving agility, speed, acceleration and explosive power in sports like soccer, football, badminton and cricket players.

Keywords: Speed, agility, quickness, athlete

Introduction

Sports has become an integral part of the human life, be it competitive sport or recreational sport. In both aspects of sports, the level of competition has reached to a point where it becomes extremely important for the athlete to improve one's performance. Also, prevention of any injury is the priority at various competitive levels. Varied techniques are used to enhance the performance of an athlete in the literature ^[1].

A good conditioning program has to be designed on the basis of specific physiological demands in each sport. It should focus to improved skills as well as strategies to prevent any injury to the athlete ^[2].

Most of the sports today involves skills such as agility, speed, power, balance and reaction time.

Speed is the ability and the skill needed to achieve high movement velocity ^[3]. Agility is the ability to change velocity, direction and mode of response to a stimulus. It involves change of direction of speed as well as perceptual and decision-making components ^[3]. Quickness is the ability to change body position with maximum rate of force production ^[4].

Quickness involves both aspects of speed and agility while also incorporating strength, neuromuscular coordination and flexibility by allowing the athlete to move at a higher rate of speed ^[5]. Reaction time is the time interval between any stimulus and the initiation of motor response to the stimulus ^[6].

Speed, agility and quickness training (SAQ), a type of skill based progressive exercise, helps in the development of the neuromuscular system thus improving motor skills and body function. It is now becoming a popular method of training and is used by physiotherapist, strength and conditioning specialist and many coaches. It includes exercises from low intensity to high intensity ^[7].

Definition

SAQ an acronym for 'speed, agility and quickness' is the title of a system patented by a company called 'SAQ International', which works in the UK with top football teams like the Rugby Football Union and West Ham United, and internationally with the likes of the Miami Dolphins American Football team and the New South Wales Waratahs rugby team in Australia ^[8]. Speed, agility and quickness (SAQ) aims at the developing motor abilities and the control of body movement and developing the neuromuscular system ^[9].

The primary purpose of the SAQ training is to develop the rate of force production, the response to stimuli, improve the velocity of movement and prevent injuries ^[8].

Physiology

Neurophysiological and neuromuscular adaptations form the basis of any type of training. The effects of different types of training are interrelated to each other. The exercises lead to increase in strength, power, speed and agility by changing or enhancing the neural drive. Neural drive includes the production and transmission of action potential. Training helps to increase the neural drive by increasing the rate and amount of production and transmission of action potential [3]. The neurophysiological changes that accompany the speed agility quickness training is around the Stretch Shortening Cycle (SSC) [3].

The Stretch Shortening Cycle is a high velocity eccentric contraction followed by rapid concentric contraction. It is a spring like movement which forms the beginning of many high intensity movements involved in sports. Speed and agility both depend on the ability of the neuromuscular system to perform this cycle. It depends on the development and transmission of action potential and also the strength of the muscle tendons to adapt to such large forces and to produce the force. SAQ training is a type of multi-joint training program and also involves high velocity movement and thus improves the Stretch Shortening Cycle [3].

Designing a program

Speed agility and quickness training programs consist of a broad spectrum of exercises. The following are the parameters on the basis of which the training schedules are designed in order to gain maximum benefits - exercise interval, exercise order, frequency, intensity, rest interval and load [3].

Clinical efficacy

Speed agility quickness training has its role in many of the sports today that involves speed, agility, power and quickness as the main skills. Injury prevention and thus better performance can be achieved by using this. There have been studies conducted on various sports signifying the importance of SAQ training with its effects.

An experimental study was conducted in 30 male basketball players in the age group of 18 to 24 years. The thirty subjects were divided into two groups of fifteen each – one group received speed, agility and quickness training for three days per week for six weeks and the other control group who did not participate in any special training apart from their regular curricular activities. It was observed that there was a significant difference between SAQ training group and control group on skill related fitness like speed, agility, explosive power, breath holding time and resting pulse rate [8]. An experimental study conducted in 40 male cricket players who were divided into two groups of 20 each. One group underwent SAQ training for 6 weeks and the other was the control group. Each subject was tested for agility through 4x10 yard shuttle run test nearest in seconds and endurance through 12-minute run and walk test in meters. The study showed that SAQ training had significant effects on agility and endurance in cricket players and that inclusion of SAQ training in conditioning program may help to improve skills and enhances performance [2].

Speed, quickness, and agility decline with age due the neuromuscular changes that occur with aging in a senior athlete. The rationale behind training this population for speed agility and quickness is to help reduce injuries and increase their ability to play and prolong their sport life. A review literature showed the importance of speed agility and quickness training in senior tennis players which includes the

effects of aging on the athlete and the skills that need to be maintained for effective sports performance. It also includes the program design and types of drills that can be used with the variables [5].

Another study conducted in 30 male sport club badminton players who were equally divided into three groups – experimental group 1, experimental group 2 and control group. All the three groups underwent routine badminton practice. In addition to this, group 1 received ladder drill and experimental group 2 received SAQ training. The duration of training was for eight weeks, thrice a week for alternate days. It was observed that there was a significant improvement in speed and agility among sports clubs badminton players in both the groups, ladder drill and SAQ training, [7].

Another study conducted in 26 soccer players who were divided onto two group of 13 players each. Group 1 received SAQ training program, and Group 2 conventional training program for 8 weeks. It was reported that there was a significant effect of speed, agility and quickness training program in improving in speed, agility and acceleration of the soccer players [9].

Another study conducted in 28 football players of the First Croatian national league of senior pioneers (U-15) of which 14 players in experiment group and 14 in control group. Both the groups received training consisting of technical- tactical part, fitness activities involving speed, agility, endurance and strength. In addition to this, experimental group was involved in extra SAQ training that twice a week for 6 weeks. It was observed that speed, agility and explosive power improved in the experimental group as compared to control group enhancing the performance of football players [10].

Conclusion

Speed Agility and Quickness training plays a major role in developing many of the basic skills required for the sport such as speed, agility, strength, reaction time and quickness. It can be adopted as a part of a strength and conditioning programs for the athletes at all the levels. Starting it at the root level helps develop skills needed for better performance and also plays an important role in preventing injuries and thus increasing the duration of the sporting career.

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