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ROLE OF PHYSICAL COMPONENTS FOR PHYSICALLY DISABLE ATHLETES

AUTHOR

Mr. ANAND KUMAR VERMA

TGT, K.V. DAMOH, M.P.

INTRODUCTION

Sport is a term that encompasses a broad spectrum of experiences that include the social, recreational, and competitive. Physical activity is widely accepted as a necessary component for individual health. Over recent years, there has been increased emphasis on the role of sport and physical activity in enhancing health and quality of life of individuals with disability and chronic illness (Goldberg, 1995). Individuals with disability can generally receive the same health benefits from exercise and sport training as their able-bodied counterparts.

These benefits include:

- (a) Physical benefits – general fitness, cardiovascular conditioning, cardiopulmonary endurance, muscle strength, flexibility, postural control, balance, adaptation to impairments, optimal musculoskeletal functioning.
- (b) Psychological benefits – improved motivation, self-confidence and self-esteem, personal adjustment, competitive spirit, reduced anxiety, and reduced tendency to withdraw (Goldberg, 1995; McCann, 1987). Sport participation and intensive training has also been shown, similarly, to benefit individuals with neuromuscular impairment of cerebral origin (Richter, Gaebler-Spira and Mushett, 1996). Individuals with confusions who participate in sports have improved proprioception and increased proficiency in the use of prosthetic devices (Malanga, Filart and Cheng, 2002).

Sport participation also has an impact on general health. Persons with a disability who are active have been shown to have fewer cardiac risk factors, higher high-density lipoprotein (HDL) cholesterol (good cholesterol), and smoke less than their disabled and non-active counterparts. Athletes with paraplegia are less likely to be hospitalized, have fewer pressure



ulcers, and are less susceptible to infections than non-active characters with paraplegia (Malanga, Filart and Cheng, 2002).

PEOPLE WITH A DISABILITY IN SPORT

- Exercise and sport can be used as a therapeutic or preventative intervention for enhancing physical and mental health for adolescents;
- Regular physical activity helps reduce symptoms of stress and depression;
- Sport participation enhances mental health in a variety of ways.

Once cleared for participation by a physician, physical fitness and conditioning is the single most important aspect of injury prevention in sport. This starts with proper assessment of each of the basic components of fitness. These are the general areas of 1) cardiovascular or aerobic fitness; 2) muscular strength, endurance, flexibility, and 3) motor ability. Once general conditioning activities take place then sport- specific activities are incorporated to enhance performance and readiness in that sport. Knowledge of these elements should be basic to any individual performing coaching or training of an athlete.

- **Cardiovascular or Aerobic Fitness** -is the ability of the body to take in, transport, and utilize oxygen during physical activity.
- **Muscular Strength** -is the ability of a muscle or muscle group to create force, typically performed with high resistance and low repetitions.
- **Muscular Endurance**- is the ability of a muscle or muscle group to sustain activity without fatiguing, typically the activity being performed offers low resistance and high repetition.
- **Muscular Flexibility**- is the ability to move a joint/segment through a range of



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motion where the surrounding muscles/tendons/connective tissues are lengthened.

- **Motor Ability**- is measuring of basic functional static and dynamic tasks like speed, balance, and agility. Evaluating abilities in this area will help determine readiness for a sport, position, or need for training focus.

BENEFITS OF A FITNESS PROGRAM

This specific type of conditioning provides the athlete with an individualized program that prepares him/her for the sport's unique metabolic and biomechanical demands, injury risks, and level of fitness. The overall program goal is to improve performance and prevent injury. The conditioning program begins with the identification of the athlete's goals and choice of sport. Each program is geared to the individual's level of fitness upon entry (Malanga, Filart and Cheng, 2002).

With general sport fitness as the base, training for the higher level of fitness needed for that given sport incorporates flexibility, muscular strength, muscle balance, aerobic endurance, speed, agility, and sports-specific skills. Conversely, for individuals with neurologic disabilities, overtraining is a major concern. These athletes are subject to chronic repetitive strain and overuse injuries because of the reliance on the remaining functional limb(s). For athletes with SCI using wheelchairs, chronic shoulder injuries are common occurrences that may, in large part, be due to overuse and overtraining. Hence, it is important to strike a balance between carrying out the appropriate training program and overtraining. Precautions to prevent fatigue also are presented for athletes with MS and neuromuscular disorders (Malanga, Filart and Cheng, 2002).

The training program is divided into phases (eg, off-season, preseason, early season, late



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season). The program may be gradual in intensity and of longer duration for the elite athlete, in comparison with the recreational athlete whose play season is often shorter (Malanga, Filart and Cheng, 2002).

Sport participation in general, and intense training for elite competition in particular, bring inherent risk of injury to the athlete. Many believe that athletes with disabilities are at greater risk than their non-disabled counterparts. However, epidemiologic studies of sport related injuries reveal that athletes with disabilities experience injury rates similar to athletes without disabilities (Richter, Sherrill, McCann, Mushett and Kaschalk, 1998). The Athletes with Disabilities Injury Registry reported an injury rate of 7.23 per 1,000 exposures which is consistent with rates reported in similar studies on athletes without disabilities (Ferrara, Richter and Kaschalk, 1998). Ferrara and Davis (1992) reported that half of the sport related injuries to wheelchair athletes were strains and muscular injuries to the upper extremities. The repetitive motion required for wheelchair propulsion puts repeated stress on the athlete's shoulder, wrist, and elbow. Wheelchair athletes are particularly susceptible to rotator cuff injuries and overuse injuries, such as impingement and bicipital tendinitis.

In addition to injuries typically sustained by athletes without a disability, amputee athletes may experience skin breakdown or irritation during training. Athletes with lower-limb amputations may need specialized padding to protect the stump from injury. However, improvements in the design, materials, and technology of prosthetic devices have reduced the number and severity of sport related injuries to amputee athletes (Richter, Sherrill, McCann, Mushett and Kaschalk, 1998).

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ISSUE MARCH 17

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