

# Study on Physical Fitness & Prevention of Injuries in Sport Medicine

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**Abstract** – In this review, we will study on Sports medicine is an industry that focuses on physical fitness, treatment & prevention of sports and exercise-related injuries, as well as exercise prevention. Sports medicine aims to enhance the sport performance of people, to recover from injury & prevent future injury. One of the most important aspects of sports medicine is the sport medicine team. It comprises therapists, coaches, physicians, and athletes. Each of these groups of members plays a different role in the team.

**Key Words** – Sports Medicine, Injuries, Prevention, Treatment, Physical Fitness

## INTRODUCTION

Sport Medicine is a branch of medicine which deals with physical fitness and the treatment & prevention of sports and exercise-related injuries. The aim of sport medicine is to assist people with their training objectives safely & efficiently.

A wide variety of physical conditions are treated by sport professionals, including acute trauma, like sprains, fractures, strains & disturbances. They also treat chronic overuse, except tendonitis, degenerative conditions and overwork.

Sports medicine blends general medical education with sports science concepts, orthopaedics, biomechanics, sport nutrition, & sports psychology. Sports medicine combines general medical education. Specialists such as doctors, surgeons, athletic trainers, sporting psychologists, physical therapists, nutritionists & coaches, and personal trainers can be involved with a sports medicine team.

## SPORTS MEDICINE SPECIALISTS

A medical sports professional focuses on the medical, therapeutic and functional aspects of exercise & works with athletes specifically to develop their professional skills. The title of "sports medicine specialist" does not necessarily mean the specialist is a physician. It can be applied to any number of disciplines for which sports medical practices are used.

Sports medicine is not a medical specialty in and of itself. Rather, it implies additional training focused on the medical aspects of sports & exercise after foundational certification has first been achieved.

Non-medical professionals concerned in sports medicine include:

- **Physical therapists** who help people recover from injuries
- **Certified athletic trainers** who provide rehabilitative programs to help athletes regain strength & prevent future injury
- **Nutritionists** who assist with weight management and nutrition in conjunction with physical training or recovery

## PHYSICAL FITNESS

Physical fitness is the ability of body structure to work efficiently be healthy and perform exercises of daily living. The healthy person will complete their homework & yet enjoy sports and other workouts. An adequate person can respond in a sustainable way to normal conditions of life such as rip-off leaves, storing shelves at a part-time job, & marching in school in the band. A fit person may also respond to crises-for example, by eagerly seeking support or supporting a friend. The physical fitness depends on how well a person meets each of the healthy components. Sprinting (sprinter) is important for the athletes' physical characteristics, including as strength, strength, pace, agility, coordination, muscle endurance, reaction time, cardio-vascular & respiratory endurance. Speed, agility, power, coordination and reaction-time are particular characteristics. These characteristics are improved by the repetitive practice of the different trainings for which they are needed. The strength, speed, agility, co-ordination, power, flexibility contribute to the particular motor characteristics. Only few

physiological parameters namely “Blood Pressure-diastolic, Blood Pressure-Systolic, Pulse Rate, Breath Hold, and RespiratoryRate” were considered for the present study. Cardiovascular resilience, durability, muscle strength & endurance and skill growth are the core components of physical conditioning. Active activities such as running, swimming, cycling and to a certain degree by weight-resistance training & arm-cranking are effective conditioning of the cardiovascular system. A passive exercise powered by computers, changes in temperature, medicine, or diets could not replace active exercise. This is best accomplished by stretching exercises that expand the motion body range, which could also be increased by weight training. Muscle strength and endurance are built by practising weight resistance and by sports. Latest study and technical advances have changed training methods in order to validate such activities based on empirical findings in the past. Based on this new scientific knowledge, the sports therapist, physiologist, trainer & physical education provider will change their approach. Computerized systems precisely calculate & control the role of cardiovascular air during rest and exercise. Many advancements in training methods and fitness were promoted by organised sports competitions. Biomechanical video analyses are useful for team-improvement coaches. Aerobic dance lessons include footballers, and strength & endurance weight training is utilized to enhance the performance of athletes at all competitive sports. People with lower limb amputation will perform exercise & sport train essentially same as people without a disability. Depending on the exclusion level & accessibility of special facilities, such modifications can occur in the exercise routine.

## ANXIETY

Anxiety is an emotional state, represented by a feeling of dread, apprehension, or fear. In humans, this can be defined by description using language. Sizeable research has studied the nature of competitive anxiety and how it applies to different driving and cognitive factors in the area of sport psychology. The goal of this investigation line is to provide valuable information on circumstances in which athletes may encounter negative affective disorders, their backgrounds & potential means for athletic performers to effectively cope with their negative emotions. Present sport (competitive) anxiety study is largely focused on multidimensional conceptualization & anxiety assessment in other fields of psychology. It differentiated among cognitive (care) & somatic (emotional) anxieties in particular, respectively. The negative expectations & cognitive concerns of oneself & situation as elements of cognitive anxiety were listed while the somatic aspect of anxiety represents perceptions of physiological responses, like stress & nervousness. A large number of sport psychology studies have analysed competitive anxiety using a multidimensional assessment tool, the CSAI-2, to assess both cognitive & somatic angst and autonomy. The results of these studies confirmed the difference between

cognitive & somatic anxiety components as different backgrounds, time characteristics & different effects of success were shown & interventions were also responded differently. However the findings of some studies were not too illuminating or promising despite these major developments, including the fact that much of the performance variance were clarified. The introduction of the idea of "path" of anxiety was an important step towards understanding the essence of competitive anxiety. This refers to the manner in which sportsmen mark the strength of their cognitive and physiological signs on a weakening and facilitative continuum. In order to demonstrate mechanisms which can enable sportsmen to perceive their anxiety symptoms, the symptoms of anxiety are regarded as facilitating or weaker, according to athletes' perception that they can regulate both themselves & their environment, and their confidence in their ability to cope with and reach their anxiety. Several studies have explored the correlation between psychological capacity and competitive anxiety. In 2001, for instance, Hanton analysed the strength and direction in which swimmers had competitive anxiety, which had different psychological abilities. Results have shown that performers who indicated higher use of calming techniques have less anxiety & perceived symptoms as more performance-efficient than comparable groups. Similar findings were observed by Maynard & colleagues when they used a non-elite football intervention approach. A number of other organisational studies have also found encouragement for the utilize, in evolving perceptions of the symptoms of elite & non-elite population, of both individual talent & multimodal psychological abilities.

## SPORTS MEDICINE PHYSICIANS

Sport medicine physicians are doctors specialising in sports accidents and disease diagnosis & treatment. Although a lot of sports medicine doctors deal only with athletes, many of them work with everyone after a sports injury who wants care. Most sports medicine physicians are first certified in family practice, emergency medicine, pediatrics, internal medicine, or orthopedics before embarking on a two-year fellowship in sports medicine. Most will receive an American Board of Family Medicine Certificate of Added Qualifications (CAQ) for sports medicine.

Many doctors of sports medicine deal with musculoskeletal non-operating conditions. Others are orthopaedic surgeons, whose specialty has been selected to focus on the procedure of sports injuries. Beyond muscle, bone, and joint injuries, a sports medicine physician will be qualified to treat any number of other associated conditions, including:

- Concussion & other head injuries
- Chronic or acute illnesses (such as asthma, diabetes, or hypertension)

- Nutrition, supplements, ergogenic aids, & performance issues
- Injury prevention
- "Return to play" decisions in sick or injured athletes

Generally speaking, sports medicine physicians will tend to earn higher incomes than their non-specialist counterparts.

### **SPORTS SCIENCE SPECIALISTS**

The based study of physiology, Anatomy & Psychology concepts, which apply to human movement & physical activity, is sport science, also related to as exercise science. as a discipline, exercise science is primarily focused on clinical research (including physiological responses to exercise, comparative effectiveness of exercise techniques, and the impact of performance-enhancing drugs and supplements).

### **EDUCATION AND TRAINING**

There are numerous job opportunities in sports medicine-related fields. Those pursuing degrees in sports medicine or science often work in a clinical, academic, or service-oriented setting. Others are employed by sports organizations or practice on a freelance basis.

Colleges and universities have begun to aggressively add sports medicine programs to their curriculum. Only a few years ago, you would be hard-pressed to find much selection. Today, there are undergraduate and post-graduate degrees specific to sports medicine, exercise science, kinesiology, sports coaching, and a variety of other sports-related fields.

For a sports medicine physician, the educational track is much more intensive and can take anywhere from 12 to 13 years to complete. From start to finish, the program usually includes:

- Undergraduate degree: 4 years
- Medical school: 4 years
- MD/DO residency: 3 years
- Sports medicine fellowship: 1 to 2 years

Even non-medical sports medicine specialists require extensive training. A certified athletic trainer (ATC), for example, will gain certification only after completion of a bachelor's or master's degree in a related field. To be certified, candidates must demonstrate the capacity to recognize, evaluate, prevent, and provide appropriate treatment of athletic injuries.

### **IMPORTANCE OF SPORTS MEDICINE**

The sports industry is an important sector of the global economy. Countries that participate in national & international sports events generate revenue that develops their economies and improves lives of athletes. Sport medicine is critical as it tracks athletic activities involving multiple risks that prevent athletes from harming themselves.

Lesions do substantial damage to the body & decrease the athletes' performance & productivity. In addition, long-term physical complications can lead to physical injury (Engerbretsen 961), for example organ amputation and paralysis. For instance, articular pain, body aches, & arthritis cause fractures.

It is also critical that accidents are prevented and treated. Recovering movement and behaviours following injury requires the expertise of qualified clinicians with experience of how to induce bone & tissue regeneration.

Sport medicine is also important as it relates to prevent potential injuries, thereby enhancing the health of athletes. Physical injuries cause athletes tremendous discomfort and pain, as it takes quite a long time to recover. Moreover, they often cause irreparable injuries to athletes' careers.

Significant brain injuries that occurred from physical injury have paralysed some athletes. Others have also been amputated to prevent any injury to their hands or legs. Sport medicine actually prevents these athlete incidents.

### **COMMON SPORTS INJURIES**

Circumcision, muscle cramps, knuckle sprain, ACL sprains, injuries & splints are common injuries to sport. Because of the aggressive motions within brain, the concussion arises from extensive head trauma.

Muscle cramps are triggered by sudden muscle contraction & consequent relaxation loss. They are not seriously complicated because recovery is swift. The ACL sprains are the result of weak knee / feet coordination.

The feet are set firmly on the ground without movement to accompany the knee movements (Schepesis).

Heavy physical activity contributes to excessive deformation of the ligaments. Shin splits product of muscle overuse linking the bottom leg to the shinbone.

## RESEARCH IN SPORTS & EXERCISE MEDICINE

The area of sports & exercise medicine investigates various links between physical activity & health issues, thus leading to the promotion of people's health and wellbeing. A core goal in our research projects is to gain awareness of the benefits of physical activity in preventing & treating illnesses. The research focuses on the benefits and also the drawbacks of physical activity. The research is structured into five partly overlapping domains according to the method selected:

1. Epidemiological studies
2. Intervention studies
3. Studies on genetic and molecular mechanisms
4. Systematic reviews and meta-analyses
5. Research related to methodological /technological development

### Which Professionals are in Sports Medicine Sector?

Sports Medicine Professionals have specialization in Exercise and Sports Science. The professionals in the field of Sports Medicine are designated as following:

- Medical Doctors
- Physical Therapists
- Physical Therapists Assistants
- Athletic Trainers
- Massage Therapists

### Education in sports & exercise medicine

Students will research the benefits and hazards of physical activity in the area of prevention, care & recovery of problems of health & prescription and preparing of healthy & efficient exercise for individuals with various diseases in the master's degree programme in Sports & Exercise Medicine. The acquisitions & critical assessments of applicable field-based expertise as well as research methods & use of the methods in one master's thesis are the core elements in these studies. For instance, realistic training can deepen the field-specific experience. Sport training & exercise medicine trains students for study & health-promoting physical activity skills at different levels, organisations in the health & sport fields in the planning, growth & administrative task market.

### What Are The Sports Medicine Services Inclusive Of?

Sports Medicine Services are intended to bring the

injured person into the best of health so that he/she can get back to his or her usual activities. The Sports Medicine Services primarily focus on:

- Biomechanics
- Conditioning
- Synvisc
- Cortisone
- PRP (platelet rich plasma)
- Hyaline
- Injury Prevention
- Injury Management
- Euflexxa
- Viscol supplementation
- Rehabilitation

## CONCLUSION

Sports medicine is not a new concept in the world of athletics. Its history could be traced back to the 5<sup>th</sup> century. It involves identification, treatment, & prevention of injuries in sports. In addition, it deals with physical fitness & well-being of individuals involved in sports and physical exercises. It is a wide field of study and practice because it encompasses skills and knowledge of different professionals that comprise medical doctors, kinesiotherapists, athletic trainers, nurses, nutritionists, physiologists, & doctors of osteopathy. It takes care of all aspects associated with athletes' safety and health. One of the most important aspects of sports medicine is the sport medicine team. It comprises therapists, coaches, physicians, and athletes. Each of these groups of members plays a different role in the team. Coaches develop training programs, physicians treat injuries, and therapists offer advice on appropriate training procedures.

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