

PHYSICAL TRAINING INJURIES

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Abstract: Every student and every injury are different. Each must be treated differently and sometimes uniquely. The role of the military physical training should be to identify the risk factors of injury and work to eliminate those. Many times all this requires is constructing a fitness program following the principles of fitness. The military physical training is the grass roots level and injury prevention is the key to keeping all yours students on the job

Keywords: risk factor, traumatic injuries, rehabilitation.

PURPOSE: To instruct military physical training students in sports medicine implication.

TRAINING OBJECTIVES:

A. Identify the risk factors for the physical training injuries and the signs of common injuries.

B. Identify first aid and prevention techniques for physical training injuries.

I. INTRODUCTION

There are many similarities between military physical training injuries and sports injuries, just as there are similarities between military training and athletic training. In military training, as in physical training for athletics, there is a need to develop strength, stamina, skill and confidence. Activities that are used by both soldiers and athletes include calisthenics, running, drilling, and games.

The medical community is not surprised then that the injury types and patterns are similar to those suffered by athletes. The most common injuries as found by (Jones et. al) are: (1) stress fractures, (2) overuse injuries of the knee, primarily patello-femoral syndrome and "chondromalacia"; (3) plantar fasciitis ; (4) Achilles tendonitis ; (5) ankle sprains. These same five injuries account for over half of all injuries found in the civilian running and jogging population as found by (Clement 1981, Pagliano 1980, James 1978, Jones 1983).

The Army and its training programs are designed to meet the need for "total fitness" however between 80-90 percent of all basic training injuries are to the lower extremities. Tomlinson, in a study conducted at Fort Lewis, Washington, found injury rates to be 80 injures/100 troops per year. Fifty-five percent of these were directly attributed to physical training and sports. In combat troops vs. combat support troops the combat troops had significantly higher injury rates. It was also found that troops engaging in the greatest number of hours of physical training per week (greater than 10 hours) were at the highest risk for injury.

Another concern for the military is the potential seriousness of these injuries. In 1991 in the Army there were approximately 2500 injuries requiring hospitalization, these could be directly related to physical training injuries. If marching, drilling, twisting, turning, falling, and jumping accidents were included, this figure would increase to 5000. It has become apparent that muscles skeletal injuries associated with physical activity are a source of disability and lost resources for the military population. There is a shirking pool of manpower resources in the military today. With this thought in mind it becomes apparent that no one is expendable.

The Army today employs the most current concepts in sports medicine and physical training to prevent injury and develop fitness. As the Master Fitness Training it will be your responsibility to follow these concepts and guidelines when setting up your unit fitness program. This lesson will assist you in knowing what these training injuries are, how to identify the risk factors associated with injury and how to treat these with first aid and lastly how to prevent these injuries.

II. RISK FACTORS FOR PHYSICAL TRAINING INJURIE

A. Risk factors for injury fall into two categories. Extrinsic factors are those factors which come from the environment or outside the body. Intrinsic risk factors come from within the individual. In order to understand and prevent these injuries it is important that training planners recognize the different types of risk factors.

1. Extrinsic Risk Factors

- a. Training parameters (rapid increases)
- b. Equipment (shoes, boots, etc.)
- c. Training surfaces (roads, trails, etc.)

2. Intrinsic Risk Factors

- a. Low levels of fitness
- b. Anatomy (flat feet, bow legs, etc.)
- c. Body fat (high %)
- d. Sex (females)
- e. Age (older)
- f. Prior injury

B. The most important variable to consider in training are the factors that determine the effectiveness of the training. The parameters that need to be varied to achieve a training effect are the intensity, duration, and frequency of activity. Research indicates that injury rates can be expected to increase as frequency and/or duration of training increase. For the other risk factors the relationship to injury rates has not been as clearly established. Wise trainers plan training to manipulate these critical factors in such a manner so that training takes place progressively with recover planned between bouts of hard work. Recovery and progression, principles of intensity and duration of training bouts.

III. CATEGORIZATION AND DESCRIPTION OF INJURIES

This section discusses over-use injuries as opposed to traumatic injuries. For comparison some traumatic injuries are introduced. Traumatic injuries are those that occur as a result of a single bout of intense exercise. Over-use injuries are injuries that occur as a result of too much stress on a body part, normally caused by lack of recovery time.

A. Over-use injuries

Modern physical training places intense demands on the recovery and restorative powers of the body. Many times we find the adaptive and healing processes have not kept pace with the training demands, resulting in over-use injuries which are frequently difficult to identify and frustrating to deal with.

1. The inflammatory and healing process. It is important to realize that the body's initial reaction to an injury is similar to its reaction to an infection. This reaction is termed as inflammation and occurs after an acute injury in the tissue itself. It is very common in chronic over-use conditions. The inflammatory process can present many different signs. These include:

- a. Pain. The pain is thought to be due to a combination of factors acting in a vicious circle. The trauma may stimulate the pain receptors. Interference with blood supply may also cause pain.
- b. Swelling. Swelling originates from a number of sources. One cause is bleeding from the torn arteries, veins and capillaries. Failure of damaged cells to retain intracellular fluid, losing it to the extra cellular compartment will also cause swelling. Gravity adds yet another factor that can increase the swelling.
- c. The redness and warmth are indications of an increase in the body supply to an injured area. This usually signals the healing process has been initiated.
- d. The purpose of the inflammatory process is to heal the injured tissues. Healing occurs in three stages. These are:

- (1) Cellular response. This response results in many different kinds of cells being activated. These cells can survive under anaerobic conditions and thus are able to work in damaged areas. Vasodilatation of the blood vessels helps increase blood flow to injured tissues and leads to the next stage of healing.
- (2) Regeneration. Following the cellular response, the body initiates mechanisms with which it attempts to regenerate the damage tissue, this scar tissue is very weak and if activity is attempted to soon this is where reinjury will occur.
- (3) Remodeling. The injured tissues next undergo remodeling, which can take up to a year to complete in the case of major tissue injury. Reinjury will be less likely to occur if activity is continued during this last stage of healing. This cause the tissues to adapt to activities that will be done once healing is complete. Positive profiling will help injured soldiers maintain their fitness level as well as assisting in the healing process.

2. Tissue Reactions to Training.

a) Micro Trauma

Constant repetitive stressing of the body day after day leads to adaptive changes which enhance performance, but may also lead to change in some soldiers which result in microscopic tears of the tendon, muscle and bone.

b) Symptoms

The inflammatory response to micro trauma can be divided into phases according to the severity of the symptoms.

Phase I: Pain after activity only.

Phase II: Pain during and after activity with no significant functional disability.

Phase III: Pain during and after activity with significant functional disability

Phase IV: Pain all the time, with significant functional disability.

3. Sprain.

- a) One of the most frequent injuries that occurs in the military is the inversion ankle sprain (ankle turns over). This usually occurs when the soldier is running straight ahead and changes direction quickly. The foot suddenly plantar flexes and inverts, and the soldier feels a sharp pain on the outside of the ankle. A sprain is a stretching or tearing of ligament fibers.
- b) Having sustain an ankle sprain, the soldier should not be allowed to limp around but should be helped off the field, bearing no weight, and should remain in a non-weight bearing position until the ankle has been evaluated.
- c) Two other sprains that are common in soldiers are the shoulder separation (acromioclavicular sprain) and

sprains of the ligaments of the knee. The same guidelines should be followed for each injury – no participation until the injury has been evaluated.

- d) Grade 1 sprain is a mild injury consisting of only limited tearing of ligamentous fibers. It has mild pain, point tenderness, little swelling and minimal functional loss. The expected time loss will not exceed 7 days.
- e) Grade 2 sprain is more serious injury and involves partial tearing of the ligament. It has moderate pain, point tenderness, localized swelling, joint instability, and moderate loss of function. The expected time loss will be from 7 to 21 days.

4. Strain.

- a) A strain is an injury to a muscle. The areas strained most often are the hamstrings, quadriceps, low back and groin (adductors). The injuries, unless severe, generally go unreported. Hamstring and quadriceps strains usually happen when a quick is demanded, i.e., 3 seconds rushes. The muscle may not be properly warmed up for the activity. The actual strain or tear in the tissue may occur in the muscle proper, or near the ends on the tendon areas. The soldier may feel a sharp pain and hear a snap or he/she may feel nothing at all until later. A lump may also be seen or felt in the damaged muscle. Groin or adductor strains are most often associated with a sudden jerk or slip that causes an overextending tear. Low back strains are also very common. Low back pain is annoying and at times incapacitating. There are many causes of back pain and this problem should definitely not be ignored, and an examination should be done by physician. Back pain may be localized in the back but it may radiate down into the buttocks and legs.

- b) Grade 1 strain is a mild injury consisting of only limited pulling/ stretching of muscle/tendonous fibers. It has mild pain, point tenderness, little swelling, and minimal function loss. The expected time loss will not exceed 7 days.

- c) Grade 2 strain a more serious injury and involves partial tearing of muscle/tendonous fibers. It has moderate pain point tenderness, some swelling, and moderate muscle/tendon loss of function. The expected time loss will be from 7 to 21 days.

- d) Grade 3 strain is a complete or near-complete tear of muscle/tendonous fibers. It has severe pain, point tenderness, swelling, severe loss of function and minimal to no muscle/tendon strength. The expected time loss will be more than 21 days.

5. Bursitis.

- a) This is another common problem that unless it becomes severe is often not reported. Characteristically, a bursa is found near the ends of a bone, and between muscles.

- b) Common areas of bursitis (swelling or irritation of the bursa sac) are the hip, elbow and shoulder. The signs and symptoms of bursitis are the same no matter where they are located. Tenderness, pain, overuse or some type of trauma to the area.

c) 6. Tendonitis.

- d) Achilles tendonitis occurs quite frequently following a gastro strain, contusion of the Achilles tendon itself or through overuse. Overuse is the most common cause. As a result of the overuse an irritation develops between the tendon and surrounding tissue with the resulting loss of the smooth, gliding pattern. The significant findings are pain on motion of the tendon particularly under tension, a crunching sensation on motion, tenderness along the involved area, local heat and redness and other signs of inflammatory reaction. This is one injury that if not treated promptly and correctly, can become a medical disaster. Rupture

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of the Achilles tendon requires a surgical repair and up to a year of rehabilitation. The soldier who is having problems should be evaluated promptly by a physician. In most cases complete rest of the tendon is in order. A physician can make necessary medical decision on treatment.

- e) Another area that may develop a similar type of injury (epicondylitis) is the elbow. The condition is commonly known as “tennis elbow” or “little league” elbow depending on location. Again a physician should be consulted and can make the necessary recommendations.

7. Shin Splint Syndrome.

The term “shin splints” is a lay term that refers to any lower leg pain resulting from running activity. It is a nonspecific term – avoid using it. a physician should make a specific diagnosis, however many physicians only refer to this type of problem as shin splint syndrome. Shin splint syndrome can involve one or all of the following:

- a) Posteromedial pain. Pain and tenderness along the inside of the tibia – most common area.
- b) Tibial pain. Pain and tenderness directly on the tibia.
- c) Anteriotibial compartment pain. Pain and tenderness on the front inside of the tibia.
- d) Lateral compartment pain. Pain in the lateral compartment of the leg.
- e) Fibular pain. Pain and tenderness directly on the fibula.
- f) Posterior pain. Pain on the back of the lower leg
- g) Miscellaneous. Problems not associated with any of the above.

Once the physician has made an attempt to diagnose, treat symptoms, and positive profile, the soldier should then return to the master fitness trainer for an exercise program to fit the profile. Problems involving the shin have a tendency to reoccur often and become a nuisance. The soldier may feel either sharp or dull pain in the already mentioned areas. As the soldier becomes better conditioned the problem usually resolves itself.

8. Plantar Fasciitis.

Plantar fasciitis can be caused by an acute injury (strain) from sudden excessive loading of the foot. The soldier walking, marching, or running in a boot without good support and flexibility is at increased risk. Running shoes that are inflexible and nonsupportive can also contribute to the problem. Pain and tenderness are localized to the plantar aspect of the foot (the bottom), and they usually radiate from the heel forward, particularly when the soldier takes his or her first steps in the morning. Swelling may be seen near the heel. Localized tenderness is present at the plantar fascias attachment into the calcaneus (heel bone), just above this attachment, in the area of the medial arch, over the inside band of plantar fascia, and in the muscle of the big toe. There may be pain during activity and passively moving the foot up (dorsiflexing), especially if the big toe is also dorsiflexed. A tight plantar band can be palpated. The physician again will be responsible for long-term treatment. The MFT can help with programming responsibility for long-term treatment. The MFT can help with programming PT that is appropriate and helping the soldier choose proper footwear.

9. Patello Tendon – Femoral Syndrome.

This term covers a number of common conditions associated with the positioning of the patella on the femur. There are many causes of patellio-femoral pain, but malalignment is by far the most common. Others causes of pain (many of wick are interrelated-these may be unrelated to running but they can be brought out by running) include:

- direct trauma;
- recurrent subluxation or dislocation of the pattela;
- knee ligament or meniscus injury;

- other internal derangements of the knee;
- insufficiency of the quadriceps muscle group;
- rotational abnormalities of the transverse plane;
- patello femoral joint incongruences;
- femoral or tibiae torsion;
- post surgical or immobilization state;
- sinovial pain.

The physician should make the specific diagnosis, however, in order to understand the injury a background of knowledge is necessary in order to construct a physical training program that will fall within the capabilities of the injuries students.

Biomechanics.

The changes responsible for the development of patellio femoral joint pain have not been clearly defined. The current concept is that the pain is due to irritation of the nerve endings in the bone. This irritation occurs because of the loss of the normal energy absorption function of the cartilage on the surface of the bones in the knee itself.

History and Symptoms

The usual sufferer of malalignment is the his or her teens or early twenties and is usually physically active at the onset of symptoms. Most do not resolve spontaneously over a period of time. Most do not resolve immediately without receiving treatment or changing the type or amount activity. Many students have pain in only one knee at a time, though some have pain in both knees. Normally the main complaints are:

- pain when going up and, particularly down stairs or hills;
- aching when sitting with the knees at 90 degrees for a period of time. This is usually accompanied by stiffness witch disappears rapidly after walking a short distance;
- pain during activity, after activity, or both, particularly after squatting and cycling;
- catching, grating, transient locking, and a feeling of giving way at times;
- swelling is an uncommon presenting symptom and if present, is usually mild.

Stress Reaction (fractures)

The term “fracture” co notates a separation of the bone. This however, is rarely seen in the stress-related injury. The process is initiated

when the body is subjected to either low repetitions of high loads or high repetitions of relatively normal loads (load is defined as the

amount or force applied to an object). Muscle failure appears to be the chief initiator in the stress reaction process.

Strenuous exercise produce muscular fatigue, witch in turn, results in either an altered gait or loss of energy storage capacity in the muscle or bone. All of

this leads to abnormal loading of the bone which causes an altered stress distribution within the bone. The stress overload triggers

negative bone remodeling. If the individual continues the activity without allowing proper remodeling process to occur, micro fractures

may convert to larger fractures.

In the lower extremity, alterations in compressive and tensile stress patterns are the major areas of concern. The most common sites of compressive stress reactions are the inferior neck of the femur, the proximal and distal tibia, the metatarsals and the calcaneus. Tensile stress reaction can be likened to the “green stick fracture”. Essentially there is a repeated bending of the bone away from the cortex in witch the reactive process occurs. This are most commonly seen in long bones, metatarsals, fibula, tibia, tibia shaft, the superior neck and the shift of the femur. Tensile stress reactions have a greater possibility to develop large fracture than the compressive stress reactions.

Signs and symptoms

The students usually complain of a vague onset of pain, unrelated to a specific incident or event. Normally there is a slow but gradual progression of symptoms. Initially, pain occurs after activity and is often described as an ache or stiffness but resolves with rest. With continued activity, pain occurs during and after activity but is not present at night. Ultimately the students will complain of pain with all activity, at rest and night.

The typical clinical signs when the involved bone is superficial are localized edema, increased temperature, and localized tenderness of the bone. If the involved bone is not superficial, the symptoms are more vague. The students usually have an abnormal gait, signifying pain with weight bearing.

IV. MECANISM OF INJURY VS. INTRINSEC RISK FACTORS

A. Equipment. It is likely that wearing the appropriate footwear for specific activities can influence rates of injury. However, no studies have examined the relationship of any type of footwear and the incidence of injury from an epidemiologic perspective. The handout on guidelines for buying running shoes will help you as an military physical training assist your students in choosing proper footwear.

B. Training surface. Much mythology also exists regarding the best type of surfaces on which to train. Roads have been greatly maligned in the literature largely because of their hardness, whereas trails, tracks, and grass have been touted as nearly ideal running surface. The rough and unpredictable surfaces of the trails and grass also expose the runner to the threat of sudden traumatic injuries, such as ankle sprains. They also increase biomechanical stress and strain due to compensatory postural adaptations to uneven surfaces, which provide a level and predictable training surface, may not be the hazard to runners which they have been portrayed to be, especially if shock absorbent footwear is worn.

C. Physical fitness. Physical fitness is probably an important factor in the causation or prevention of injury. However, what is important may not be just endurance conditioning but also muscle strength and skeletal conditioning.

D. Body composition. Obesity has also been speculated to contribute to the risk of injury secondary to weight-bearing physical training. Evidence suggests an association between increasing incidence of injury and increasing “fatness”. It should be kept in mind that a very small number of individuals are very obese in this population. However, if poor fitness and over fatness are combined, this may increase injury incidence.

E. Sex. It has been assumed in the past that women are at a higher risk for training injuries than man. Because of such speculation women were prevented from competing in international distance running competition until the last twenty years. There are discrepancies between the surveys of female civilian runners and army female as far as injury rates. Civilian females being for women entering the army but rather than women entering the military have lower levels of fitness than man and higher percent of body fat. Physical training programs that do not account for differences in gender may increase the risk of injury.

F. Age. Increasing age is usually considered a risk factor for injury. However, at the Boston marathon and other marathons, older individuals at finish line medical areas actually have lower rates of injury. It is not clear how to explain these data except to say that older individuals at the Boston Marathon run slower and are more likely to drop out, suggesting that perhaps they modify their risk by judicious exercise practice.

G. Prior injury – those who have been injured before are at risk for the re-risk.

V. THLETIC INJURY FIRST AID

A. Standard practice in the sports medicine community is R.I.C.E. plus S2.

1. Rest. Rest is necessary because continued exercise or other activity could extend the injury. Stop using the injured part the minute it is hurt. Once the proper medical evaluation has been made the rest will be either extended on the students will return to activity.

2. Ice or cold application. The application of cold is a very important first-aid procedure. Cold is used in the acute soft-tissue injury because it decreases the metabolism of the injured tissues, thereby reducing the need for oxygen at a time when there may be a limited amount available at the cellular level. It also limits the extent of the injury and controls the amount of the swelling. The severity of pain and spasm may also be lessened.

Various type of cold application includes the following:

- Ice. Place crushed ice in a double plastic bag, a wet towel, or a conventional ice bag. If available, use an elastic wrap that has been presoaked in cold water to hold the ice in position. The time schedule for the ice application depends on the type and severity of the injury, but twenty or thirty minutes every hour for the first twenty-four hours is a good rule of thumb.

- Chemical cold pack. Though there are many varieties of cold packs available, their ability to lower the temperature of the deeper soft tissues is limited, and their use should be restricted to emergency situations where there are no other options.

- Ethyl chloride and related chemical sprays. Sprays are used in soft-tissue injury, particularly when it is accomplished by muscle spasm. These sprays must be cautiously applied because skin damage from freezing may occur.

1. Compression. Compression is usually accompanied by application of an elastic wrap, which can first be soaked in cold water to aid the cooling process (a dry elastic wrap has insulating properties and may counteract the effect of cold).

2. Elevation. Elevation is most applicable to an extremity. Where practical, the involved part should be elevated higher than the heart for much of the first twenty-four hours following the injury.

3. S2
- stabilization or protection of the original injury from additional trauma;

- gentle stretching of the injured area over ice if applicable.

VI. PREVENTION OF INJURY

a. Medical awareness and risk factor knowledge. Awareness of the medical problems encountered in the psychically active students helps to prevent injury. Another important factor is knowledge of the intrinsic and extrinsic factors related to injury. If prevention is our concern, the focus of attention should be on modifiable risk factors such as mileage run, footwear, training surface, and changes in fitness level and body composition.

b. Proper conditioning decreases the number of medical problems in physical active individuals. Many problems stem from the body's being unprepared to do what is asked of it. A major factor involved in reducing the risk associated with physical activity is in the design and implementation of an individual's exercise program. The program can focus attention on problems encountered in your assessment of the soldier. The manner in which the MFT conducts the exercise program has a major bearing on the risk on injury. The contrast of the “No Pain, No Gain” school of thought with the recommendation of warm-up, stretching, and cool-down makes the point. Educating your soldiers about the proper frequency, intensity, time, and type, the exercise principles and about recognition of the signs and symptoms of overuse is also important in minimizing injury risk.

VII REHABILITATION

The goal in rehabilitation of an injured soldier should not be that different from the rehabilitation of the injured athlete. A soldier lost due to injury costs money and available resources are limited for replacement. Vigorous, intense, but controlled exercise allows early return to activity, ensuring that the injured part is optimally conditioned as possible. The goal of the medical treatment and physical therapy must be restoration of function to the greatest possible degree in the shortest possible time. This means physical therapy and rehabilitation should begin at the same time as treatment of the injured part. Treatment and rehabilitation should blend imperceptibly into one, as acute care and early rehabilitation can minimize the effects of the injury. Rehabilitation is started while healing is taken place, resulting in an earlier return to activity and perhaps an improvement in the quality of the tissue that forms during the healing process. The aim is not necessarily to speed up healing (which cannot as yet be done), but rather to do all that is possible to avoid slowing it down.

The physical therapist and physician will outline the treatment protocols and positive profile, however the MFT can have direct input into the rehabilitation program of that soldier. The MFT can work directly with the physical therapist to outline the rehab program.

The Rehabilitation Program.

An individualized program drawn up within the parameters of the individual soldier's positive profile is absolutely necessary. This program should include how long each session should last and the number of times per week that each exercise should be performed, and should also include a long-term plan that estimates when each exercise should be used.

The master fitness trainer must work with the equipment he has available to him. The MFT must remember that without proper supervision and motivation even the most expensive equipment may not accomplish the task at hand.

The program should be progressive, so that an increasing amount of work is preformed at each session, as long as profile limits and the limits of discomfort are not exceeded. Frequency, intensity, time, and type must be discussed with the soldier and therapist to insure it is within the above limits. Correct form should be constantly stressed to maximize results and prevent injury. There should be a definite rhythm and timing to the exercises depending on the type of equipment utilized. The rehabilitation should progress in an orderly fashion through predetermined stages. These stages are different for each individual and each injury, however they generally include:

- a. Initial emphasis focuses on cardiorespiratory fitness and isometric contractions, if a joint is immobilized. Exercising the opposite limbs may evoke a crossover reaction and maintain the muscle of the opposite limb.
- b. When the immobilization is removed, a pain – free range of motion is regained through graded exercises, PNF, and cryotherapy.
- c. As join motion and flexibility return, resistance exercises can be increased. Some programs start with limited- range isotonic exercise, others may use low-resistance, moderately high speed exercise on isokinetic machines, using submaximal intensity through a limited range of motion.

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d. As strength is developed, more emphasis is placed on speed, power, and endurance, circuit training techniques, and flexibility exercises.

e. As the last step, specific skill patterns and physical activity skills (sports skills) are prescribed, with progressively complex drills.

There are several criteria that should be measured during and at the end of the rehab program. The therapist and MFT should work together to measure these. The injured side should meet the uninjured side of these measurements.

The criteria are:

- a) Strength of each muscle group
- b) Power of each muscle group
- c) Endurance of each muscle group
- d) Balance between antagonistic muscle groups
- e) Flexibility of the muscle around the joint that was rehabilitated
- f) Proprioception of the injured joint and affected limb.
- g) Functional use of that limb in the required physical task.

1. Common mistakes. These are mistakes made by those supervising or programming rehabilitation.

- a) Rehabilitation is often focused on a single muscle group only. After evaluation of the soldier to find out which muscles are particularly weak, all muscle of that limb need to be exercised, concentrating on those that are weaker. The limitations of the positive profile should be observed.
- b) Rehabilitation is seldom continued until the injured limb is found equal or superior to the uninjured side. The seven parameters previously mentioned need to be tested and the results documented before allowing return to participation.
- c) Exercises for developing proprioception are often forgotten
- d) Postural defects and anatomical malalignment, as well as biomechanical imbalances, are frequently neglected when the rehabilitation program is developed.
- e) Specific physical activity skills and the SAID principle (specific adaptation to imposed demands) are often not incorporated into the program. Exercises should be adapted to the specific need of the soldier's particular position in the unit.

As the unit MFT you are much more aware of whom and what your student's jobs and specific needs are; the physician and the therapist may not know this soldier as well. The MFT can have positive input into each of his soldier's special fitness programs.

IV. CONCLUSIONS.

Physical fitness is probably an important factor in the causation or prevention of injury. However, what are important may not be just endurance conditioning but also muscle strength and skeletal conditioning.

Every students and every injury are different. Each must be treated differently and sometimes uniquely. The role of the MFT should be to identify the risk factors if injury and work to eliminate those. Many times all this requires is constructing a fitness program following the principles of fitness. The MFT is at the grass roots level and injury prevention is the key to keeping all your soldiers on the job.