Physical Condition and the Police Officer

How your Body Works

Part 3 concludes this series of articles on physical fitness for Police officers. We hope it has motivated some of you to get into better shape!

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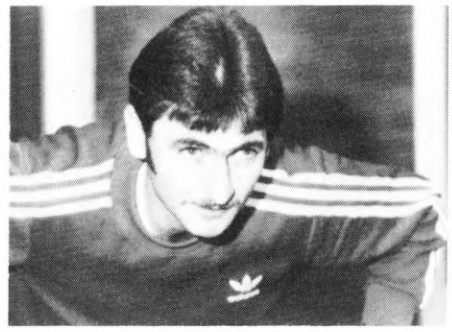

by Jock Alcock

The Muscular System

The muscular system is the key to keeping us together and moving, but to do its job it relies heavily on the performance of the heart, lungs, cardiovascular/respiratory systems and blood vessels previously discussed in this series.

Exercise will increase the individual's movement capabilities by increasing the size of the muscle fibres which contributes significantly to the strength and endurance of the muscle. We all know that repeated practice of a particular activity will increase co-ordination, agility, efficiency and speed. We can train and use muscles for a specific skill or we can train generally with the complete body musculature reaping the benefit. In deciding on a programme, one should carefully consider these two facts and consider the validity of any particular programme: will your programme achieve your objective?

The muscular system is directly related to the improvement of the circulatory system and in order to understand the relationship you must first understand how a muscle gets its energy.

In order to work, a muscle must first extract energy from the available food supply. The first step in this process is called the anaerobic (without oxygen) phase where glucose (sugar) or glycogen (fat) is converted into a substance called pyruvic acid. This acid yields two or three units of adesonine triphosphate which is the substance that immediately provides energy for muscular contraction. When the oxygen supply to the muscle is sufficient for muscular contraction the pyruvic acid undergoes two complex series of biochemical reactions known as the citric acid cycle or Krebs cycle and the electron transport system. This phase is called the aerobic (with oxygen) phase.

During strenuous bursts of activity, the increased use of energy demands that the production of energy be increased, so the conversion of glucose and glycogen to pyruvic acid is increased. Obviously there are limitations on how much the oxygen supply can be increased. When the oxygen supply is not sufficient to utilise the pyruvic acid produced, it is stored by converting it to lactic acid. A build-up of this acid is known as the oxygen for its further employment. Even after physical exertion has ceased, you will continue to breathe rapidly because your body still requires an increased oxygen intake to use up the lactic acid or change it back to glycogen.

The common term muscle fatigue results from an accumulation of lactic acid within the muscle. Excessive amounts of lactic acid will depress the muscle's activity and interfere with the muscle's ability to contract. This of course is nature's defence mechanism against excessive exertion by forcing you to stop and rest.

It should now be apparent that an improved circulatory system is important to any conditioning programme. Increased oxygen supply means a well utilised aerobic process. Burning more food efficiently means that more energy will be available for the muscles and less lactic acid will be produced. The onset of fatigue is delayed because the lactic acid is removed from the active muscle site quicker. Finally, the oxygen debt which does accumulate can be repaid faster. All of these benefits owing to a more efficient cardiovascular-respiratory and circulatory system.

Muscles and muscle groups. The muscles of the appendicular skeleton, including the arms and legs, are the ones most associated with movement but the muscles of the trunk, the axial skeleton, are of equal importance. The condition of these muscles will help determine balance, co-ordination, efficiency of movement and the amount of force you are able to exert. Good posture is a benefit of good trunk muscles while back complaints are a sign of poor trunk muscles. Lack of physical exercise contributes to poor posture and back ailments. It is interesting to note that there are more than 100 muscles involved in supporting the back and controlling its movements, with the abdominal muscles also classed as back supporters.

Stress

Another important aspect of physical fitness is the ability to cope with stress.

The body's response to stress depends on the condition of the muscular system, the amount of body fat and the actions of the individual experiencing stress. The physiological state of stress in general occurs when the sympathetic nervous system in conjunction with the adrenal glands, prepares the body for response to a fight or flight. The body gears up for an increased demand for energy: the heart rate soars, the breathing rate increases, a large amount of fat is poured into the blood stream, the amount of insulin produced is increased and the blood vessels to the muscles dilate while those to systems not immediately essential narrow. Stress may be the result of an emotional situation, physical exertion or some other factor. Most Police Officers encounter stress many times during the average working month.

A good example of the effects of stress after the fight/flight situation arises would be the body taking in more air than it is accustomed to, the blood carrying more oxygen than it usually does and the heart trying to beat faster than it is conditioned to. The result would probably render the person incapable, cause him to pass out or even die. What is happen-

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ing really is that the heart is forced to pump blood at such an exaggerated rate that it cannot cope, and simply overloads and gives up.

Emotional stress can cause such a condition. The only precaution is to condition the heart and the circulatory system to cope with unforeseen stress, emotions and excessive exertion.

The popular trend to live aggressively and always be in a hurry to achieve more in life is evident everywhere. People chain-smoke and overwork to met a deadline with no time for anything else. This type of person falls into the "chronic stress" category. This has the same results as acute stress: stimulation of the sympathetic nervous system and adrenal system, but not to the same degree. Chronic stress is now considered to be a major killer in the western world because of the predominantly competitive and ambitious nature of people.

Over a period of time, with high levels of hormones constantly in circulation, chronic stress will eventually cause isolated fibrosis or scars of the heart. If enough of these scars accumulate, they can interfere with the heart's electrical activity, destroy its tissue and may cause the heart to stop altogether.

Stress is actually a normal function that prepares us for action. The harmful effects of stress occur because more often than not, physical activity does not follow stress. We are left with an imbalance between mental and physical activity resulting in an inappropriate chemical response to the sedentary stresses of modern life. Over a period of years this unnecessary mobilisation of sugar and fats without physical activity leads to a narrowing of the arteries and can promote the formation of blood clots until finally the heart attack occurs.

The answer then would appear to be for us to condition our bodies through regular exercise in order for us to cope with stressful situations. In some cases this will mean a complete behavioural change, to get away from the stressful existence or at least put up a force equal to the amount of stress. The way to relax the mind is to work the body . . . sounds a bit old-fashioned but it does work. Vigorous physical activity will prove the best antidote for mental and emotional tension. It is difficult, if not impossible to remain mentally tense during vigorous physical activity.

Summary

My attempt to provide a readable, informative series on physical fitness has taken me through an extensive research period, a lot of medical, police and education texts and bulletins, in the hope that I could find relevance in the bare essentials while maintaining a complete picture of the issue.

Most Police Officers are in an occupation where demanding physical exertion and high levels of stress are now commonplace. Instances where great physical demands are made are on the increase, and physical fitness will often be the factor that determines success or failure, possibly life or death. Police Officers cannot predict their physical activity, but if they have taken the time to condition themselves physically, they can at least be prepared for the day when that activity arrives.

This article and plain commonsense should be all the motivation required to enter into a conditioning programme.

A word of advice though: if you have not exercised for a considerable time or are over thirty years of age, see a doctor first. He will further advise you on programme content. Remember also, train don't strain and don't let your programme become boring . . . use variances and above all . . . never give in! If you still manage to find excuses that prevent you from physical activity, have a friend analyse those excuses. The result may surprise you (or make you lonely).

New Station at Tullamarine

The A.F.P. Melbourne Airport Branch have now settled into their new $500,000 station, and members say it has improved working conditions immeasurably.

The need for the new station dates back to the inception of the then Compol Melbourne Airport Branch in 1975, when the police presence at Tullamarine increased from two a shift to 12.

Existing space within the Airport building immediately became inadequate with the main office serving as a reception area, interview room, muster room and meal room, sometimes simultaneously. Ad hoc offices were acquired but it became obvious that A.F.P. needs could not be met in the limited space available within the airport building.

Construction began early in 1979 after plans and a site had been agreed upon, and the new station was completed in May, 1980.

Situated about 200 metres from the terminal building, it can accommodate 85 male and 15 female police.

The building has a pleasant outlook and good natural lighting is provided by a number of floor to ceiling, tinted windows. Internally, apart from specified offices, work areas have been left open, and are carpeted and air-conditioned throughout.

The control room is manned 24 hours and has a base radio for communications with foot patrols, mobile units and Division Headquarters; telex, vocadex, telephone switchboard, control panel for all common lighting and building fire alarm.

Facilities envisaged for the future include direct link communications with airport emergency personnel, State police, motor registration and driver's particulars, visual display units for flight information, closed circuit T.V. for monitoring Station and cell security, an alarm panel with connections to Airport banks and other high risk areas and finally an internal paging system.

The outer area consists of seven undercover parking bays for police vehicles, a compound for impounded vehicles and two holding kennels for police dogs.

As the available area for the station was not big enough for full kennel facilities, these are now located about 1 kilometre from the police station.

The building blends well with the adjacent tree buffer zone and has a pleasant, yet prestigious appearance, befitting the image of Australian Federal Police.