**ENERGY CONSIDERATIONS**

All Ball Sports require certain elements of endurance. Lawn Bowls although a less mobile ball sport has quite a different requirement to say Australian Rules football. The Lawn Bowler must be on his or her feet for lengthy periods of time, sometimes in hot conditions and be able to maintain high levels of concentration. Whilst very high levels of aerobic and anaerobic energy production are simply not required in the lawn bowler, it is clear that the ability to play day after day is more related to good general health, including a well functioning cardiovascular system, a well balanced muscular system and good flex ability

This sport provides a good example to demonstrate that performers in even the less strenuous sports will benefit from endurance training. Certainly a well developed cardiovascular system and good body composition, coupled with an **appropriate diet,** will assist target athletes such as the lawn bowler, to maintain concentration over long periods

**ACQUISITION OF MOTOR SKILLS**

Aiding the athlete in the acquisition of fine motor skills is at the very heart of bowls sport coaching, that the term 'motor skill' in itself may be somewhat of a misnomer, understanding the role that other important processes (that are active prior to muscular contraction) play in skilled movement production is a must. Lawn Bowls is classed as a **Closed Skill** which is performed in environments which are highly predictable and where the performer can plan what to do and how to do it in advance, without the time stress associated with open skills. The performance is carried out in a static and then dynamic state relative to the shot being played and involves secondary manipulation of limbs where the secondary movements of the arms is fundamental to the skilled performance. All other performance criteria being equal, tasks with secondary limb requirements are of greater complexity than tasks without these requirements, and as a consequence, such tasks take longer to acquire and require somewhat different coaching strategies. In other words a complex, intentional action involving a whole chain of sensory, central and fine motor mechanisms which through the process of learning have come to be organized and coordinated in such a way as to achieve predetermined objectives with maximum certainty. Skill performance in **closed** environments require the elite performer to display high consistency in their movements, being capable of producing identical acts ( or, at least actions with minimal variability) each time the skill is to be executed

Athletes who display skilled performance in bowling motor tasks also require postural stability and are generally capable of optimizing their movement patterns so as to minimise their lateral body sway. This is often achieved through using techniques which allow the body's centre of mass to be lowered and through using specific strength training for stabilising muscle groups. It also demands a highly developed capacity to divide their attention concurrently between two tasks, effectively doing 'two things at once'

**MUSCLE FIBRES**

Although it appears that an athlete's  basic muscle fibre type does not change drastically, the characteristics of specific fibres do under go changes with training depending largely on how the **resistance exercises are executed**

If maximal or near maximal loads are used in an explosive manner, both fibre types -- the fast twitch and the slow twitch, are recruited and hypertrophy takes place. On the other hand if loads are moved with an intentionally slow rhythm, the light, slow twitch fibres will benefit. As the rhythm becomes faster and the resistance increases (as in a drive) the fast twitch fibres are progressively recruited