

Science in Coaching

Resource: Physical Demands of Sports Participation

This resource is a supplement to the other resource needed to complete learning outcome 1 which is *Coaching New Zealand Principles of Sport Coaching, Level 1*, pp. 39-45.

Physical conditioning is the process of preparing the body appropriately for the physical demands of the sport the individual would like to engage in. Having the body's energy systems, muscle groups, joints, ligaments tendons and organs etc. responsible for effective functioning in appropriate condition, will result in the individual being capable of improved levels of performance and deriving greater enjoyment from participation.

Screening

The great advantage of having a screening system prior to engaging in demanding physical activity is that it gives the coach information about any past or existing injuries or other conditions that deserve consideration to develop training programmes for the individual.

Late Teenagers and Competitive Adult Coaching Communities

Screening information, with an accompanying fitness test, provides the coach with information about the athlete's present condition and level of readiness for participation in physical activity.

At the Late Teenage level, athletes who are increasing playing competitively will derive considerable benefit from screening as a base for performance. Adult athletes who are competing competitively, will want to have sophisticated physical preparation programmes to ensure that they are able to achieve a high level of performance.

Social Adult Coaching Community

Social adult athletes require screening as much for the determination of risk factors as for determining base-levels for performance enhancement.

Early Teenage Coaching Community

The benefit of screening for this community is to understand the athlete's background.

Fitness Testing is not relevant for the Early Teenage Coaching Community. There might be exceptions as in the case of gymnasts and perhaps swimmers who often perform at a more competitive level at a younger age.

Middle/Late Childhood Coaching Communities

For middle and even late childhood level, screening is not of great importance due to the nature of sport at this level being about enhancing the enjoyment of physical activity and less about refined physical conditioning for peak performances. Fitness testing is not relevant for Middle/Late Childhood. There might be exceptions as in the case of gymnasts and perhaps swimmers who often perform at a more competitive level at a younger age.

Specificity of sport

An important consideration for coaches is the notion of the specificity of preparation and fitness for sport. Each sport makes its own unique demands on the human body therefore requiring preparation that is specific to the demands being made. There is very little value in spending hours running distances slowly, or even engaging in skills at low intensity, if the nature of participation in competition demands short bursts of activity at a very high intensity. For this reason coaches should examine very closely the pattern of activity demanded of athletes in competition and this might be very different from one position to another in team games.

By determining the level of activity; duration of intermittent activity spells; inactive periods; muscle groups involved; range of motion; demands in terms of components of fitness such as strength and explosive power, the coach can then work out the type of training that will prepare the body for the specific demands of the sport.

With regard to younger athletes in particular, much of the physical preparation can be done making use of sport specific game situations. This means that the physical preparation can be closely linked to the movement preparation. That is, the physical demands can be placed on the body while developing skills specific to the sport.

Middle/Late Childhood and Early Teenage Coaching Communities

For these athletes, most of the physical training can be done through adapted game situations or making use of skills drills that can be applied as games in themselves. In this situation the Teaching Games for Understanding or Games Sense approaches can be used to combine the athlete's growing understanding of the game with appropriate physical demands.

For weight training, ongoing research is still being undertaken to determine the value of this form of training for younger population groups.

Late Teenage and Competitive Coaching Communities

Though Competitive Adults and Late Teenagers have increased fitness requirements, using Teaching Games for Understanding or Games Sense approaches will still develop many of the fitness components needed specifically for that sport. If games and activities are designed well, and athletes are motivated because of the game, athletes will experience more intensity than with using repetitive type drills.

Weight training has a role and this form of training is probably more important amongst the Late Teenage and Competitive Adult populations. It is not surprising that even at elite level; equipment (eg. scrumming machines) has been designed to replicate the strength demands placed on athletes in specific playing positions to ensure that strength gains are appropriate to the sport itself.

Other Age related Factors

Middle/Late Childhood and Early Teenage Coaching Communities

It is worth remembering that at the Middle/Late Childhood and Early Teenage levels, athletes are primarily developing basic movement patterns utilising large muscle groups. At this point in their lives, the best outcome a coach can achieve is that their athletes have so enjoyed their activities that they are motivated to be back again next season to continue in the sport, or try a new sport, because the

experience was so rewarding. Progress and the achievement of perceived competence are often central to enjoyment and fun for participants. This competence does not need to be achieved through tough physical regimens applied during practice sessions. Athletes at this age tire quickly so the coach needs to ensure adequate, appropriate rest periods. The progression can be made through a range of game adaptations that lead the athletes towards participation in the full game situation in later years.

Emphasis for Middle/Late Childhood and Early Teenage athletes can be placed on self-referenced progress (not in competition with others). Less emphasis can be placed on competition, without however, negating the need to learn how to win and lose. The environment a coach achieves at training should be one that fosters communication, co-operation and a sense of belonging. This means that athletes will feel both physically and psychologically safe in that environment.

Early/Late Teenage Coaching Communities

Coaches need to be mindful of the impact of growth spurts on athletes who are achieving puberty around Late Childhood and Early Teenage years. At this time, co-ordination can regress as limbs become suddenly longer and less well controlled. Early maturers often find others catch up at this time. It can also be a time that includes moments of embarrassment as fundamental mistakes are made (such as tripping over one's own feet). Athletes at this stage of development can be prone to pain (eg Osgood-Schlatters Disease causing knee pain) resulting from the rapid growth of bones and joints that cannot adapt quickly enough. As this can also be a source of frustration for athletes, extra understanding, encouragement and support may be needed at this time.

Summary

As athletes progress from childhood through to adulthood, so do their bodies progress from a stage of immaturity through to fully developed muscle groups, joints and organs. Coaches need to be mindful therefore that they “load” bodies appropriately during training sessions. The human body is capable of meeting physical challenges and the body benefits from being extended appropriately. It is important that coaches take the trouble to know where their athletes are in terms of physical readiness for the demands of competition. With this knowledge in mind, they can construct training sessions that are appropriate to both the demands of the sport and the readiness of their athletes. In this way they construct optimal challenges for their athletes in that each individual is required to extend themselves just that little bit further as he or she reaches out to a new level of performance. Equally important is that the challenge is one that is well understood by the athlete who derives enjoyment from taking on a challenge that is meaningful and specific to the sport that he or she has chosen to play. In this way, athletes derive satisfaction from participation and gain enjoyment from the physical demands made of them within the sport environment.