

Introduction

Strength & conditioning is an essential part of almost any sport. In addition to the skill components involved in sports like kicking or passing a ball, jumping hurdles, throwing a discus or even sprinting, all athletes will benefit from being stronger, faster & more powerful. It doesn't always have to be weights either – running around a track or doing sit-ups or pushups are all included! Using machines, free weights or your own body weight are all well known resistance training methods. I incorporate all of these in the conditioning programs at Knox as appropriate to the age, abilities & aims of the athletes.

A lot of people (even other coaches) have preconceived ideas whether resistance training is appropriate for junior athletes. Many of the issues that people bring up when asking me about suitability in training junior athletes are what I classify as urban myths! I hopefully answer most of the common questions below. Certainly the AIS, the Australian Strength & Conditioning Association & many other sports scientists & physiotherapists regard resistance training as safe & indeed recommended for junior athletes.

Benefits of Strength & Conditioning

Strength & conditioning training for junior athletes is both safe & appropriate in well supervised programs. Strength training can have the following benefits in a suitably designed & implemented program :

- *Increased muscular strength & power*
- *Increased local muscular endurance*
- *Injury prevention*
- *Strengthening of bones, tendons, joints , ligaments & connective tissue*
- *Improved performance capacity*

Strength & Conditioning at Knox

We are privileged to have one of the better gyms at an athletics centre thanks to the dedicated & ongoing work of several of the seniors coaches. Now that Little Aths finally have a strength & conditioning coach it can be used for the benefit of older junior athletes also.

Training is free for registered Knox Little Athletics Club members & all resistance training is conducted in & around the gym under the gr&st&.

For more information pls contact Mike Donato on mike@horizen.com.au or 0414 888 563.

Gym Times For Little Athletics – 2008/9 Season

Mon - 6:30-8:00pm

Wed - 6:30-8:00pm

Sun – Varies, call first

General Resistance Training Information

We are now far beyond the days when junior athletes were doing inappropriate & dangerous single rep maximum lifts. There is now a large body of scientific evidence that has established that resistance training is both safe & has major benefits for athletes of all ages. Unfortunately even many coaches are still ignorant regarding advances & research over the last decade & therefore hesitant to recommend strength & conditioning training for their athletes generally to the detriment of the athlete's performance & increase in probability of injury. Of course training loads & volumes are light for junior athletes & are only increased appropriately as athletes get older, stronger & more experienced. Even adults shouldn't perform single rep maximum lifts without months of training & as part of a suitable progression in both technique & strength.

Many parents & even other coaches raise the risk of growth plate damage in growing athletes. All programs for athletes 15 years & younger never lift less than 8 reps in any single exercise which makes the chance of any growth plate injury negligible. For the first few months reps in the range of 10-15 are used to anatomically adapt athletes prior to undertaking harder training. All athletes are progressed conservatively, even more so than experts recommend & while injury is of course possible during training (as it is with any physical activity) every care is taken. Programs are taken from world leading experts in adolescent resistance training (slightly modified to suit our equipment at Knox). I want to improve athletes, not injure them! The load, technique & speed of resistance training can be strictly controlled unlike many other forms of training. Joint loading in jumps & plyometric training in particular places enormous shock loading on junior athletes that is far more likely to damage them than resistance training. You can suffocate in bed or get run over crossing the street – life is to be lived!

Strength training will consist of body weight, free weights & machine exercises as appropriate to the age, abilities & aims of athletes. A proportion of the exercises use dumbbells & free weights to promote symmetrical & balanced development. Balance & stability exercises also form a part of the program. Several exercises for all athletes are classified as injury prevention exercises. Typically these will be targeted at the major problem areas of ankle, knee & shoulder joints. Most exercises are multi-joint & functionally related to sports skills where possible although most injury prevention exercises are isolationist by nature & typically single joint. Strength & conditioning programs at Knox are all around programs specially devised to develop athletes in all areas – upper body, lower body & core. Both agonist & antagonist muscles are developed – ie hamstring & quads, biceps & triceps, back & abdomen, etc. Athletes undergoing a proper strength & conditioning program can have up to 400% reduction in injury compared to athletes not undergoing such programs. Girls in particular have around 450% more likely chance of knee injuries than boys due to anatomical differences between the sexes. These sorts of injuries often occur in stop start sports like netball, soccer, hockey, etc. A well designed resistance program that includes knee strengthening exercises can dramatically reduce (but never eliminate) the likely of such injuries.

I endorse all around exercise programs for athletes & resistance training is only 1 part of an all encompassing program. Skill & technique & well as other relevant training should continue for the best benefit. Where other coaches are involved then all parties are consulted in the progression & development of the athlete. Parents are an important part of the initial consultation so that everyone is aware of the intended program & realistic expectations of what can & cant be achieved. Junior athletes very rarely put on much muscles mass but on average achieve a 40% increase in strength within 8 weeks. Hypertrophy specific training (to put on muscle mass) is really only possible or appropriate post puberty. Similarly maximal strength & power training is focused on post pubescent athletes aged 15 & older. Girls typically mature slightly earlier than boys & there can be up to 4 years variation in apparent physical maturity & development in athletes of the same age & sex. This makes athlete assessment & program individualisation an important part of the initial session and ongoing program for each athlete.

Programs at Knox

There are 2 main programs – 1 for throwers (with a slight emphasis on arms & injury prevention exercises relating to shoulders joints) & 1 for sprinters & jumpers (with an emphasis on legs & injury prevention exercises for ankles & knees), but programs are also available for endurance athletes & other sports. Programs can be individually varied for each athlete & are structured somewhat towards specific event groups although all programs are primarily general purpose for junior athletes. Generally the older the athlete, the more specialised the program becomes.

The initial session covers gym safety, athlete assessment, teaching of correct technique & the purpose of each machine being used. The first few months are used to slowly strengthen athletes specifically their tendon/bone attachments & neuromuscular adaption & to learn correct exercise technique.

Pre pubescent athletes are best undergoing body weight exercises outside of the gym incorporating games & components of skill. Plenty of time to spend in the gym as they get older. I am currently using age of 12 or athletes just entering puberty as the starting point for an entry level gym program. Athletes 15 & older (around post puberty) start to get a bit more serious although 1-3RM lifts are limited to ages 18 & older who are well past puberty & have been training for at least a year.

I use the following rough guidelines :

	Age	Level of Program & Exercise
Pre-puberty	7-11	Body weight games & exercises
Puberty	12-15	Light resistance training (never less than 8 reps per exercise)
Post-puberty	16-18	Medium level training (dropping to 6 reps depending on age & experience).
Adult	18+	Can do 1-3 rep exercises but only after appropriate experience

Training is progressed over time. The first phase is always anatomical adaption –

- Increase the capacity of slow twitch muscle fibres
- Toughen tendons, the muscle/tendon interface & their attachment to bones
- Toughen ligaments & joints
- Strengthen bones & connective tissue.

Depending on the age, experience & aims of the athlete they may then progress through hypertrophy, strength & finally conversion to either power, power endurance or pure endurance.

Flexibility & stretching is an important part of the training. After warming up & completing their program athletes are required to stretch after each session.

Gym Rules

Athletes aged 15 & younger - No training is to be conducted without the presence of a qualified strength & conditioning coach.

Athletes aged 16 & older – No training unless at least one other person aged 16 years or older is present.

All weights & other training equipment are to be put away after use.

Towels are to be bought & equipment & benches to be wiped after use.

No food in the gym – only water bottles.

All equipment damage is to be reported as soon as practical.