

Introduction

Strength & conditioning is an essential part of almost any sport. In addition to the skill components involved in any sport like kicking or passing a ball, jumping hurdles, throwing a discus or even sprinting, all athletes will benefit from being stronger, faster and 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 and many other sports scientists and physiotherapists regard resistance training as safe and indeed recommended for junior athletes.

Benefits of Strength & Conditioning

Strength & conditioning training for junior athletes is both safe and appropriate in well supervised programs. Strength training can have the following benefits in a suitably designed and 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 and 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 and all resistance training is conducted in and around the gym under the grandstand.

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

Gym Times For Little Athletics

Mon 7-8:30pm

Wed 7-8:30pm

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 and therefore hesitant to recommend strength & conditioning training for their athletes generally to the detriment of the athlete's performance and increase in probability of injury. Of course training loads and volumes are light for junior athletes and are only increased appropriately as athletes get older, stronger and more experienced. Even adults shouldn't perform single rep maximum lifts without months of training and as part of a suitable progression in both technique & strength.

Many parents and even other coaches raise the risk of growth plate damage in growing athletes. All programs for athletes 15 years and younger never lift less than 8 reps in any single exercise which makes the chance of any growth plate injury negligible and for the first few months reps in the range of 10-15 are used to anatomically adapt athletes prior to harder training. All athletes are progressed conservatively, even more so than the experts recommend and while injury is of course possible during training (as it is with any physical activity) every care is taken and 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 and 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 and machine exercises as appropriate to the age, abilities & aims of athletes. A proportion of the exercises use dumbbells & free weights to promote symmetrical development. Balance and 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 and functionally related to sports skills where possible although most injury prevention exercises are isolationist by nature and 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 and antagonist muscles are developed – ie hamstring & quads, biceps & triceps, back and 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. This often occurs in stop start sports like netball, 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 and resistance training is only 1 part of an all encompassing program. Skill & technique and well as other relevant training should continue for the best benefit. Where other coaches are involved then all parties are consulted in the progression and development of the athlete. Parents are an important part of the initial consultation so that everyone is aware of the intended program and realistic expectations of what can and 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 and power training is focused on post pubescent athletes aged 15 and older. Girls typically mature slightly earlier than boys and there can be up to 4 years variation in apparent physical maturity & development in athletes of the same age & sex making athlete assessment and program individualisation an important part of the initial session.

Programs at Knox

There are 2 main programs – 1 for throwers and 1 for sprinters, but programs are also available for endurance athletes. Programs can be individually varied for each athlete and 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 and the purpose of each machine being used. The first few months are used to slowly strengthen athletes specifically their tendon/bone attachments and neuromuscular adaption and to learn correct exercise technique.

Pre pubescent athletes are best undergoing body weight exercises outside of the gym incorporating games and 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 and older (around post puberty) start to get a bit more serious although 1-3RM lifts are limited to ages 18 and older who are well past puberty and 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 and 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 after appropriate experience

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

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

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

Flexibility and stretching is an important part of the training and after warming up and doing their program athletes are required to stretch after training.

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 and equipment and 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.