

# Use of Dbands for speed development in Track and Field

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## **BLUF**

Using inter-thigh affixed resistance bands (DBands<sup>®</sup>) 2-3 times per week to provide resistance for common exercises & drills, significant improvement in hip stability, running technique and running speed has been observed in a 12 month period.



## **Abstract**

There are a myriad of training aids available on the market purporting to enhance the basic movements that recreational athletes to the elite performers execute during their training. Before the devices are evaluated with evidence based research it is difficult to determine their worth without trying them for a period of time. The author conducted her own study on the athletic squad she trains utilising DBands® during weekly sessions over the course of 12 months. DBands® are an inter-thigh affixed resistance band device that creates increased forces during hip flexion-extension-abduction-adduction. These forces can be both resistive and assistive during movement.

Following two of the author's elite junior athletes, a pole vaulter and a decathlete, across the 2017-2018 season research data collected has shown that they improved their run up speed in the vault and 100 m time in the decathlon by 0.22 m/s & 0.38 sec respectively and that both of these athletes had shown no improvement in these categories in the preceding 2016-2017 season.

The author has also observed across all athletes of the squad a distinct improvement in glute recruitment and hip stability and a concomitant improvement in running mechanics with the introduction of DBands® to their training.

It is suggested that the use of DBands® 2-3 times per week for 15-30 min in core exercises, running and jumping drills and for running itself can provide added improvement to athlete development.

## **Key Words**

DBands gluteal function, hip stability, athletic improvement.

## Introduction

The author has been coaching pole-vaulters and multi events athletes for more than 10 years and in that time has coached in excess of 100 athletes. This has included planning and supervision of their strength and conditioning sessions as well - from beginners to international level athletes. The athletes coached have represented at Open National Championships from young teens numerous times. The author's athletes have competed in Word Youth, World Junior Championships, World University Games (with Alysha Burnett winning a silver medal in 2017) and Commonwealth Games.

As an athlete the author has represented Hungary at the Sydney Olympic Games and won a bronze medal in the World Indoor Championship, placed 4<sup>th</sup> in World Championships in Seville and jumped a European Indoor record in pole vault and was able to compete at an international level for over 10 years. The author has a Masters of Education Degree in PE with a Bachelor's Degree in coaching specialization in Track and Field and is a level 4 specialist coach of pole vault in Australia.

It is the author's experience that in athlete development (especially for tall athletes) the development of a strong core and the ability to develop and activate the glutes is a great challenge. The coach must ensure that the core muscles and posterior muscle chain are working optimally. This will allow the transfer of maximum force - a fundamental requirement of maximum speed, power and efficient movement.

The author thus likes to create challenging environments to develop the athlete and devise exercises that force the athlete to learn the correct execution. Over many years in her own athletic career and then since becoming a coach the author has searched extensively trialling different equipment that would not only help to activate posterior chain and in particular gluteal muscles; but also be portable and easily used at the track with numerous athletes simultaneously. This search led to the device called **DBands®**.

DBands® are an advanced version of mini bands. They can be fixed on the lower thigh (even in tights) without distracting the athlete in performing virtually any movement. Athletes can do all the mini band exercises with them - they can run, bounce, jump and kick in it as well without restricting the joints from free movement.

They are a very new type of device on the market and despite the author's extensive literature search she was unable to locate any research to date published on this type of device so reference to other types of elastic band resisted exercise research has been included (see from page 6) . The author has given this type of training aid the term of inter-thigh affixed resistance bands.

DBands® are an elastic resistance band that can be added to most static and dynamic exercises. It has two key features:

- i) Exclusively ribbed (reducing slipping) elastic wrap that is tightened to the leg and has two D-rings per elastic wrap to attach the resistant bands.
- ii) Two resistant bands that are clip attached at the front and back connecting the wraps on each distal thigh.

The author started to use DBands® with her squad in February 2017. The squad consisted of beginner and junior athletes aged 13-19 years and high-performance athletes 21 years old.

The DBands® were used in daily training during warm up in static exercises developing core stability and strength.

Examples of general core exercises performed with them were different plank positions (front, side, back). It was also

used for glute activation in different hip thrusts (double leg, single leg), super man & RDL exercises.



The squad athletes also did their running drills in them. Examples of this include high knee walking, dribbles, high knee running, straight leg run and their combinations. Athletes were also able to do their take off drills in it including 1 step, 3 step and bounding exercises.

As the season progressed, different exercises were utilised wearing the DBands® to reflect the adaptive requirements entering the competition phase. Exercises were also able to be adjusted to meet the athlete's special needs (age, strength, skills). Athletes also liked to use DBands for activation the day before competition and/or as a part of the warm up on the day of competition. Using these inter-thigh affixed resistance bands during different movements DBands® work as a complementary part of the kinetic chain. It allows muscles to stretch and contract with increased force. The DBands® do not distract the athletes, but assist technically and physiologically by increasing the dynamic load of the hip musculature into end range thus enabling athletes to both create better take off and pre-contact positions while either running or doing drills and the athlete is then assisted from these positions to create faster leg recovery from large thigh split positions thus teaching better cyclic running motion execution more effectively.

It has been observed by the author that the timing of the leg movement improved in running for all athletes. The DBands® speed up the foot plant (bungee pulls the leg down) – thus increasing the plyometric aspect of running. There is an extra impulse for the nervous system to force it to execute movements faster.

It has been shown that increased eccentric loading with the use of bands on bar loads had the ability to improve peak concentric force and power (1, 2, 3)

During the ground contact wearing DBands® the support leg and gluteals must be switched on with the opposite hip flexors to stretch the bands. As the DBands are stretching it provides an increased resistance to switch on more motor units & muscle fibres to overcome this resistance. Band resistance similarly used as part of the end range load for gym based strength exercises has been suggested to increase neural demand and hence increase force output (4). Similarly it has been shown with banded free body movements such as lunges increases the myoelectric activity of

posterior chain muscle groups including both gluteus major and hamstrings compared to a weight loaded lunge (5).

Band assisted and resisted vertical jump training which create similar alterations when loading ground contact mechanics as DBands have both been shown to be effective in creating a training response over what free jumping was capable of (6).

By performing asymmetric movements with the DBands®, the body will switch on the stabilizers that will result in static, asymmetric and dynamic stabilization. It has been shown in both lower body (7) and upper body banded exercises (8) that the use of bands elicit greater muscle activity in joint stabilizers and that flexion and abduction exercises of the hip joint using elastic band resistance has been shown to increase dynamic balance, agility, and flexibility in healthy subjects (9).

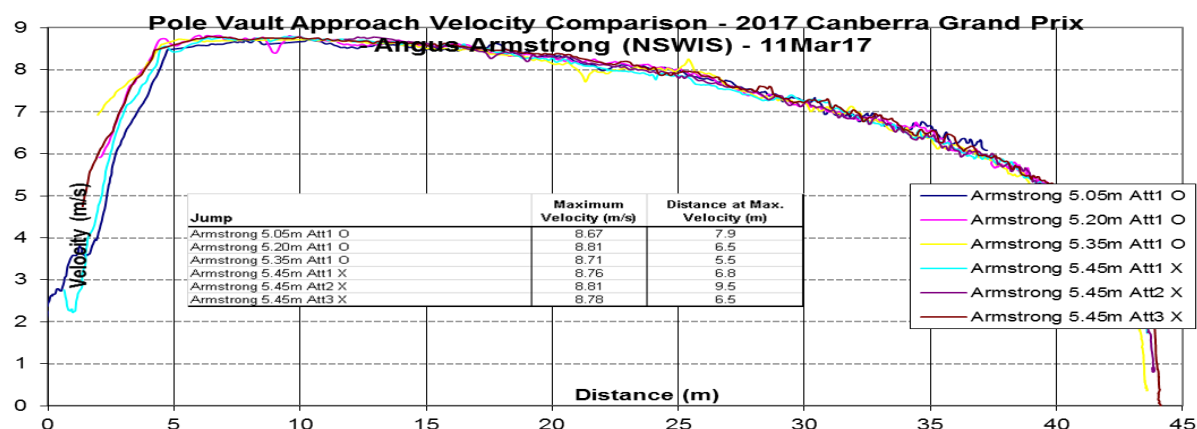
With the use of DBands® this improved reaction of neuro-muscular system to recruit both prime movers and stabilizers of the hip can be achieved with DBands® during sport specific movements. Most of the strength exercises commonly used need to have a modified specific movement to add load, but with DBands® most of the athletic movements can be executed (skipping, bounding, start from blocks, shot put, discus throw etc) with the benefit of a band resistance.

### **Athlete Examples**

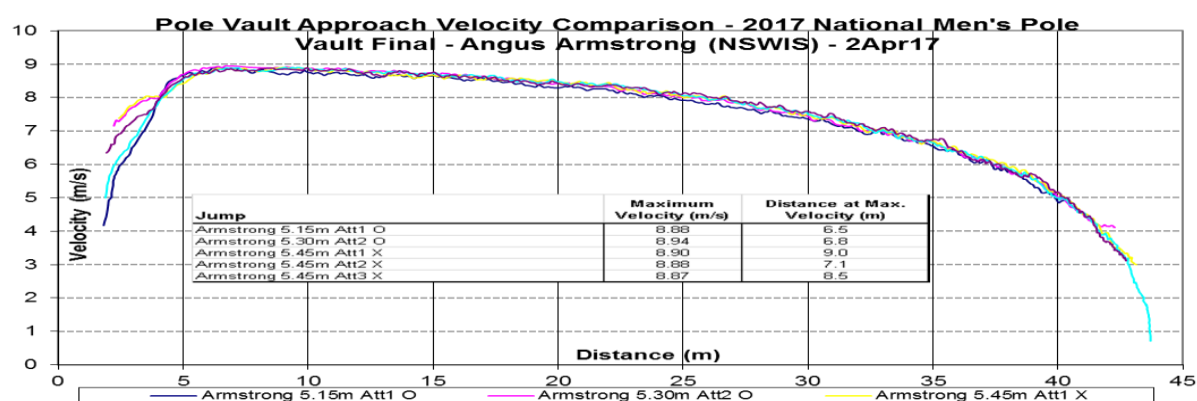
An example of the use of DBands® can be seen in the rate of improvement for athlete Angus Armstrong (AGE 20 in 2017). When the squad started to use DBands® in 2017 his run up speed average of the fastest 5 run up during one pole vault competition at the Canberra Track Classic in March 2017 was 8.774 m/s (figure 1) and then at the Australian Open National Championships in April 2017 was 8.894 m/s (Figure 2). That improved to 9.018 m/s at the Sydney Grand Prix in March

2018 (Figure 3) and 9.088 m/s at the QLD Track Classic in March 2018 (Figure 4) This was a 0.219 m/s average improvement.

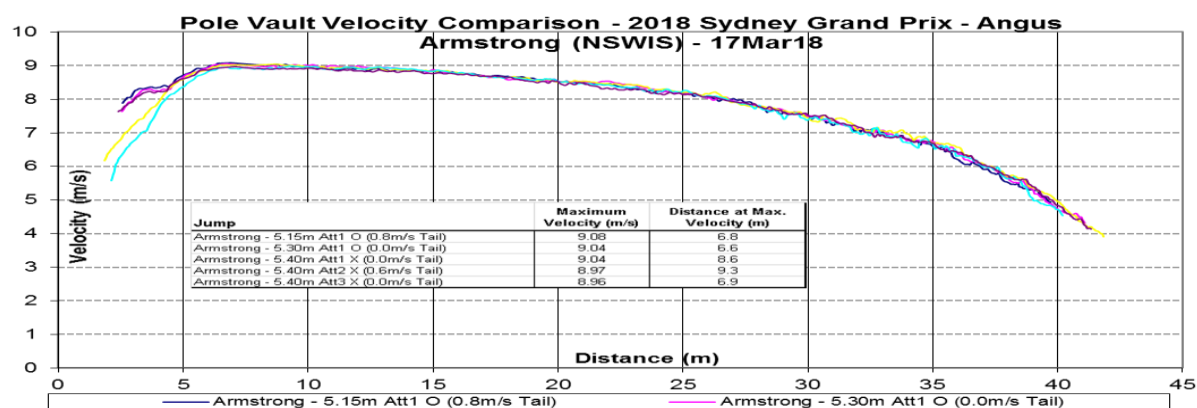
**FIGURE 1: Angus Armstrong Pole Vault Run Up Velocities Canberra Grand Prix March 2017**



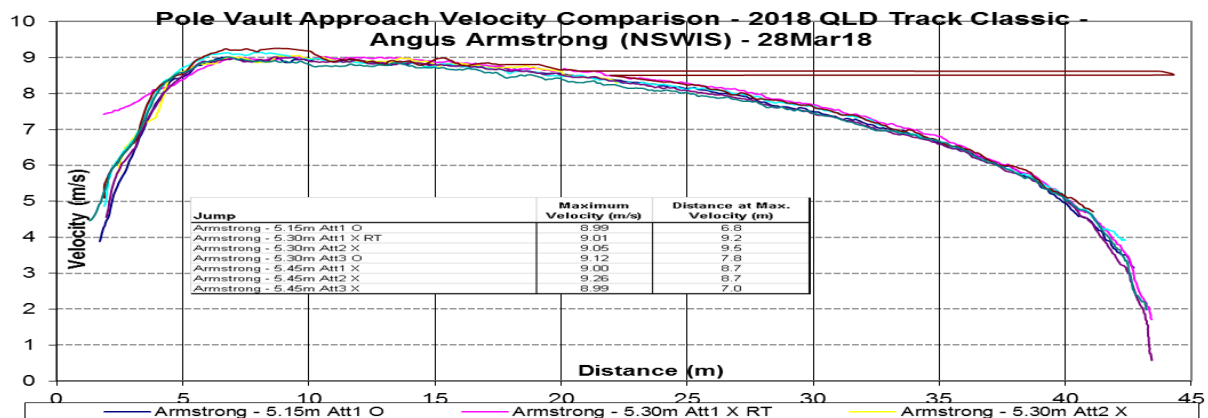
**FIGURE 2: Angus Armstrong Pole Vault Run Up Velocities Australian Nationals April 2017**



**FIGURE 3: Angus Armstrong Pole Vault Run Up Velocities Sydney Grand Prix March 2018**



**FIGURE 4: Angus Armstrong Pole Vault Run Up Velocities QLD Track Classic March 2018**



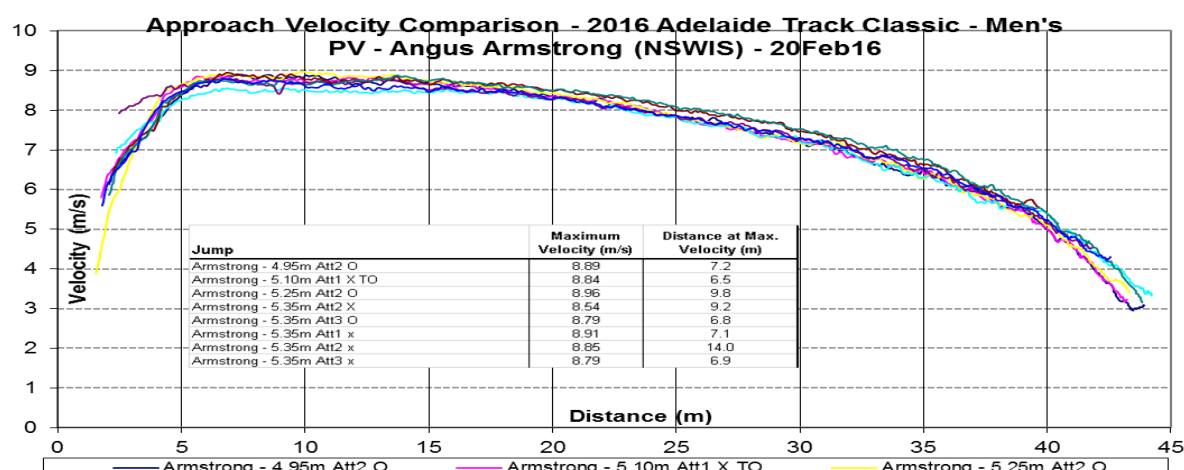
Alec Diamond (Age 19 in 2017) average of his best 3 fastest 100m dashes in decathlon competition improved 0.38 sec to 11.023 sec from 11.403 sec in 2018. His hurdles result average of 3 best times during decathlon competition improved a significant 0.94 sec to 15.3 sec from 16.24 sec as well. His long jump personal best developed from 7.04 m to 7.65 m. Although there can be many reasons and components as to why these athletes had such great improvement in speed, Alec had an average 11.38 s the previous year as an 18 year old improving only to 11.43 sec as a 19 year old and his long jump personal best of 7.04 m was from 2016 also showing a similar stagnation in performance (long jump highly depends on speed) before the squad started to use the DBands®.

Angus Armstrong's run up speed seemed to stagnate as well as his average of best 5 run up speeds was 8.89 m/s in February 2016 (Figure 5), and it was 8.855 m/s (average of 4 jumps as he did not have more attempts) in March 2016 (figure 6).

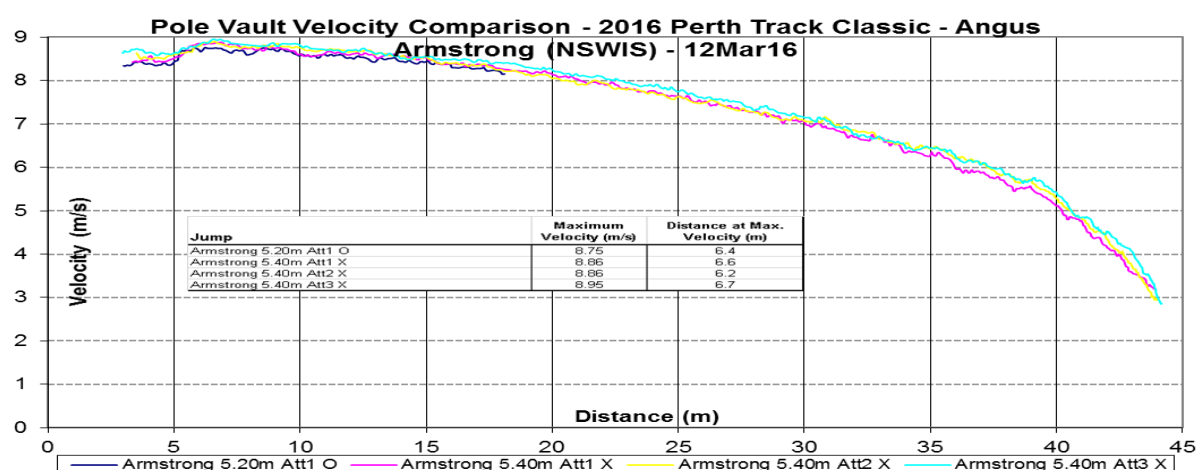
Those results were very similar to the results recorded in the next season of 8.774 m/s and 8.894 m/s with the improvement average of just 0.0385 sec compared to the improvement of 0.219 m/s in the next season with the use of DBands®.



**FIGURE 5: Angus Armstrong Pole Vault Run Up Velocities Adelaide Track Classic February 2016**



**FIGURE 6: Angus Armstrong Pole Vault Run Up Velocities Perth Track Classic March 2016**



## Practical Applications

DBands® can be added to most static and dynamic exercises from static core and hip conditioning positions to running, running drills, lateral agility and jumping movements. This can be season long with alterations in the amount of static to dynamic work and drills to full running/jumping work as the season moves into the competition phase. The author has observed both qualitative and quantitative measures that athletes' running mechanics and speed improved significantly after the introduction of DBands® to their programs. It should also be noted that despite their relatively young age their speed development had stagnated the year before.

The efficacy of DBands® on performance of movement tasks for both elite athletes and for rehabilitation in a clinic based setting has been recognised by other elite coaches in Australia (10). Since there is no published research on Inter-thigh affixed resistance bands and the author has only limited data to prove what exactly caused the speed development. The author suggests that longitudinal 6-12 week studies comparing DBands® intervention with other common training aids such as mini bands, overspeed (towing) and sled pulling (resisted running) with a control group who would not use any type of additional training aid would be prudent in the future.

#### **Affiliation Disclosure**

Since using the DBands® for 12 months the author has since agreed to become the Australian based distributor of DBands®, a Hungarian based company manufacturing this equipment and as such provides both the product and courses as a master trainer to help users integrate DBands® into their own programs.



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