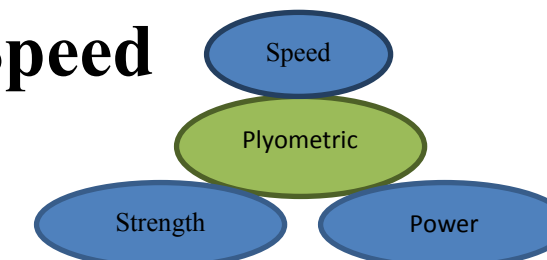


Is a Four Week Mesocycle Sufficient to Improve Speed

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Introduction

Plyometric exercise unites strongly with the physical qualities of speed, power and strength to produce an athlete capable of developing speed as well as the ability to jump higher¹. This type of explosive training has expanded to fit into a variety of sports to develop mental and physical performance, with specificity in mind progress is evolving due to the influence of muscle efficiency and measurable increase. Plyometric training (PT) has been presented to upturn performance variables. However, few studies are available to determine if the effects off plyometric training do actually enhance the speed, power and strength aspects of an individual in a controlled measure². The importance of periodisation in a training regime is essential especially for achieving specific performance goals³; little scientific information is available to discuss the impact of a short term (four weeks) mesocycle PT programme.

Objectives

To examine the effects of a 4-week plyometric programme set to young physically active students with the exception to add to their weekly exercise schedule, gathering before and after results on three controlled performance tests (Keiser leg press, Maximal vertical jump (MVJ), five meter and twenty meter sprint).

Method

Participants (n=10) consisted of healthy physically active sports students of UWTSD (age 21.1 ± 0.87 yrs.). Testing involved the use of the Keiser leg press to measure peak power output, three attempts (Best score taken forward) of a MVJ using a digital jump meter and three attempts of sprints in which the five and twenty meter marks were measured using Smartspeed timing gates, the quickest time was taken forward. A 4-week plyometric programme was performed; sessions were taken two times a week focussing on three progressive exercises (Box jumps, explosive lunge and the dot drill sequence (DDS)), sessions were progressed

References

1. Chu, D.A., 1998. *Jumping into plyometrics*. Human Kinetics.
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3. Stone, M.H., O'bryant, H.S., Schilling, B.K., Johnson, R.L., Pierce, K.C., Haff, G.G. and Koch, A.J., 1999. Periodization: Effects Of Manipulating Volume And Intensity. Part 1. *Strength & Condi-*

Testing	Plyometric programme	Testing
Pre	4-weeks	Post

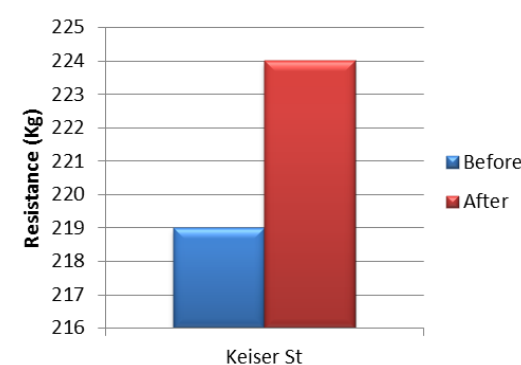


Fig 1. Average leg strength (Kg) before and after a 4-week plyometric training (PT) programme.

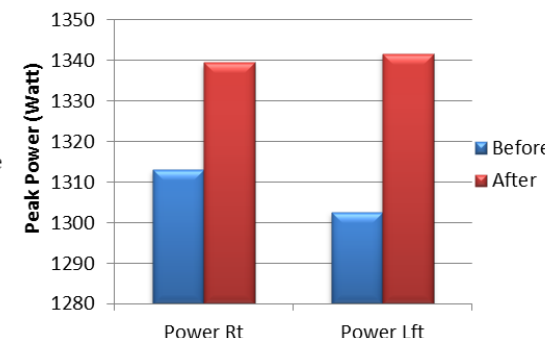


Fig 2. Average peak power output (Watt) of both right and left leg efficiency before and after a 4-week PT programme.

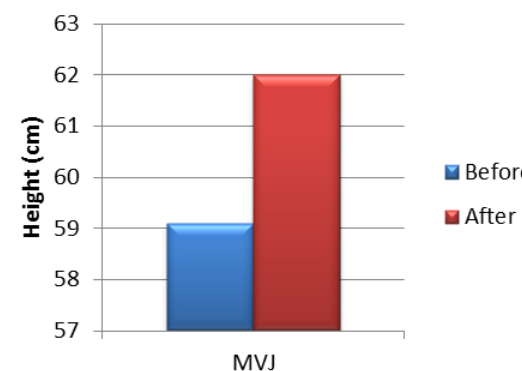


Fig 2. Average maximal vertical jump (MVJ) (cm) before and after a 4-week PT programme.

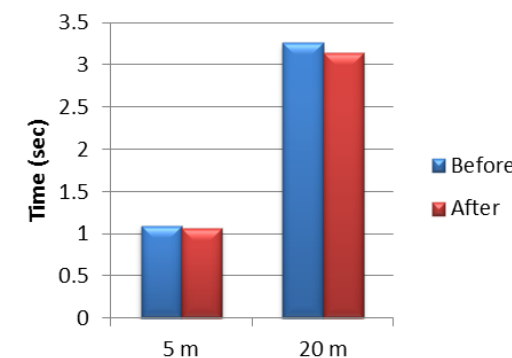


Fig 4. Average sprint speed (Secs) over the distances of five and twenty meter markings, before and after a 4-week PT programme.



Results

Combined leg strength significantly ($p < 0.05$) improved (219 v 224kg) on the keiser leg press however there were no significant differences when left (1302.65 v 1341.75w) and right (1313.2 v 1339.55w) leg peak power were compared independently. The MVJ improved (59.1 v 62cm) and demonstrated a significant difference ($p < 0.05$) with the effects of the PT programme evidencing its effects. There was a negative relationship in the five meter sprint (1.094 v 1.057secs), nevertheless there was improvements (3.2634 v 3.1395secs) at the twenty meter point and ensued a significant difference ($p < 0.05$). The correlation data ($p < 0.05$ for all relationships) showed that training affected all individuals positively, although some dimensions were not significantly different there was a trend identified.

Discussion

It was found that a short term PT programme is progressively effective at improving speed, strength and power in healthy sports students. The study demonstrated significant improvements in combined leg strength, MVJ and the 20 meter sprint following a 4- week PT programme indicating that consistent movements of plyometric exercises will provide a sufficient balance regarding speed, strength and power in young sports students. However, when the before and after data is correlated there is an indication that PT is effecting everyone in the same way i.e. improving, but 4 weeks is not a sufficient period of training for all dimensions of speed, strength and power to prove significant. The data suggests that a longer training period (approximately 6 weeks) is required to produce greater results as confirmed by a recent study². Although, expanded supporting evidence would be required to confirm this.

This information provides a greater insight for the trainer who might be devising a macrocycle based training plan.

Conclusion

A longer training period would promote further developed performances and a longer progressive time zone should prove sufficient in