| **Introduction to topic** | **Process and Effects of Training and Exercise:**
Athletics, Energy Systems, Exercise Physiology Principles, and Training Methods |
<table>
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<tbody>
<tr>
<td>General Background relating to the topic</td>
<td><strong>Table of Contents</strong></td>
</tr>
</tbody>
</table>
| Context – why it is important to look at this issue | 1.0 Introduction  
2.0 Analysis  
3.0 Conclusion  
4.0 Appendixes  
5.0 Bibliography |
| Brief Outline of purpose of report – area of study, what was evaluated, outcomes. | **1.0 Introduction** |
| Brief statement of methodology - what was done | Athletics Training Programs are designed to condition the athlete specifically to the demands of an event. For an athlete to improve performance, the selection, personal suitability and effectiveness of a training program should be assessed to ensure its success.  
This study applies **Exercise Physiology principles** to analysing the suitability of a training program for Long Jump, for the performer. Convincingly justified and independent evaluations will be made, providing solutions that reflect the individual training program and recommended actions for future improvement in performance.  
Research was conducted by Textbook reviews and Internet searches (see Bibliography). Various pre and post training program fitness tests were done to establish fitness levels and monitor improvement (see Appendixes) |
| Field: Exercise Physiology and Energy Systems | **Nominal Groups:**  
Athletics Training Programs  
training program  
individual training program |
| Tenor: Formal | **Nominalisation:**  
performance, selection, effectiveness, evaluations |
<p>| Mode: Written Report | <strong>Past Tense for discussion of methodology</strong> |</p>
<table>
<thead>
<tr>
<th>Heading</th>
<th>2.0 Analysis</th>
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<tr>
<td>Brief One sentence statement outlining aspects that will be analysed.</td>
<td>Consideration of the appropriate Training Methods and principles, Energy System and Components of Fitness required for Long Jump, allows for an effective analysis and evaluation of the provided athletics training program.</td>
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<tr>
<td>Subheading – first aspect to be analysed</td>
<td>2.1 Training Methods</td>
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<tr>
<td>Outline of arguments – should be discussed in the order they are written</td>
<td>Three training methods can be employed throughout a six week program. Methods used should improve speed, power, technique and muscle memory. Methods that should be used in the program are Interval Training, Skills Practice and Flexibility Training.</td>
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<td>First method to be discussed</td>
<td>Intervals of work are performed in sets of repetitions that are designed to overload the anaerobic energy systems (Hede, Russell &amp; Weatherby, 2011). All training sessions should utilize interval training using the work to rest ratio of 1:5. Technique sessions with maximal efforts of around ten seconds will improve the ATP-PC stores within the athlete’s muscles. Training of the lactic acid energy system is unnecessary, therefore it is recommended the intensity of exercises such as step ups, box jumps and squats are increased by adding weight, and decreasing the amount of repetitions.</td>
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<td>Secondary Source – supporting evidence (At least one secondary source per paragraph)</td>
<td>A great amount of time should be spent on skills practice throughout the program; regular sessions should be designed for the athlete to commit to technique training and muscle memory training. ‘A key point to remember in skills training is variety’ (Hede, Russell &amp; Weatherby, 2011). Therefore, in terms of skills practice, it is recommended the athlete is exposed to a great variety of drills, with clear instructions provided from a coach, a Textbook or online demonstration videos.</td>
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<tr>
<td>Secondary Source – supporting evidence Recommendation – each paragraph concludes with a recommendation relating to that method</td>
<td>‘Dynamic flexibility is the resistance of a joint to motion’ (Hede, Russell &amp; Weatherby, 2011). High knee lifts, kicking heels high, backwards running, side steps, and grapevine, are certainly useful in warming up the athlete, ‘replicating movements required in long jump, making it easy for tissues to elongate by increasing their temperature’ (Hede, Russell, Weatherby). It is recommended for future</td>
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### Supporting Evidence

Improvement a training program also includes standing long jumps so the athlete is able to prepare for two feet landings.

### Subheading

#### Description of Event

Long Jump is an event which lasts approximately 10 seconds that consists of a high intensity sprint and then a transfer of power from a take-off foot, to launch the body as far as horizontally possible. The Energy system predominantly focused on in the training program was the ATP-PC system, as it is the 'provider of energy to the muscles for periods of explosive exercise shorter than 8-10 seconds' (Amezdroz et al., 2007).

Because the energy system is the ATP-PC system the work: rest ratio should be 1:5, allowing the athlete sufficient recovery, so that the body is able to use **Creatine Phosphate stores to resynthesise the Adenosine triphosphate (ATP) energy**. For example, 10 second sprints with a 50 second recovery walk.

### Subheading

#### Topic Sentence – Outline of Fitness Components

Long Jump is an event which combines **speed, strength, muscular power and flexibility** in the attempt to leap as far as possible from take-off point into a sand pit. Speed is the ability to perform a movement or cover a distance in short period of time. Strength is the amount of force you can put forth with your muscles. Power is the ability to do strength performances quickly. Flexibility is the ability to use your joints throughout their full range of movement. Each of the training programs’ conditioning phases focused on training at least one of these fitness components each session.

### Brief Summary of Sessions

The technique and muscle memory sessions focused particularly on speed with a number of run up drills, and muscular power in practicing shorter run up drills with a more explosive leap vertically off the board. The speed and power sessions concentrated on the leg strength and hip extension of the
Refer to appendices for further supporting evidence

Recommendation for the future

Outline of training principles

Training Principles explained in order

Recommendations are given for each Training Principle

| Refer to appendices for further supporting evidence | athlete, with high intensity stair runs, box jumps and squats. See appendix 1 for pre and post test results which show the improvement of 10cm in distance for long jump. The improvement of performance of the athlete suggests that the correct components of fitness and energy systems were selected. The training methods and principles that were used for the 6 week program helped the athlete improve their performance.

In future, attention should be given to flexibility in the warm up with a series of dynamic stretches. In the cool down phase of each session the use of static stretches would benefit the athlete in preventing muscle soreness, and to increase flexibility and mobility for future training sessions.

| Recommendation for the future | In future, attention should be given to flexibility in the warm up with a series of dynamic stretches. In the cool down phase of each session the use of static stretches would benefit the athlete in preventing muscle soreness, and to increase flexibility and mobility for future training sessions.

| Subheading | 2.4 Training Principles

| Outline of training principles | Specificity, Progressive Overload, Frequency and Duration should be taken into account in the development of the Long Jump/Triple Jump program.

| Training Principles explained in order | Specificity requires the run up and jumping drills to be relevant to the development of the athlete’s long jump. Therefore, the training focuses on improving the major components for long jump which are power, speed and strength.

Progressive overload should be included in the program for the development of the major components of fitness and the energy systems relevant to long jump. For example, increasing the number of sets and reps, therefore increasing the intensity of the program overtime.

| Recommendations are given for each Training Principle | While the Frequency of training sessions appropriate for this event is 2-3 times a week for a high school level athlete training within school hours, for further improvement in performance it is recommended another session is added each week, appropriately designed according to the facilities available to the athlete. It is also recommended the athlete complete a full six – eight week program.

Should be given

| Correct components; helped the athlete improve... | More explosive leap

Nominalisation:

| Flexibility, mobility | Nominalisation – specific components, power, speed, strength

Nominalisation – specific components, power, speed, strength

| Components of the fitness and energy systems | Nominal Groups – progressive overload, components of the fitness and energy systems

| Full six – eight week program | Strong modality – it is recommended

Nominalisation – specific components, power, speed, strength
Duration refers to the amount of time spent on each exercise. For example, 10 x 20m sprint each being a maximum of 3 seconds with a work: rest ratio 1:5. Therefore there will be a 30 second walk back between each rep.

3.0 Conclusion
Training programs for long jump should be well designed, targeting the specific fitness components of speed, muscular power and flexibility. The training for the ATP-PC energy system, appropriate training principles and training methods will contribute to an improvement in the long jump event.

The athlete should focus on the ATP-PC systems in power training, by decreasing the repetitions and increasing the intensity with weight resistance. Frequency of sessions should be at least 3 times per week. Specificity of Static and/or dynamic stretches in cool downs and warm ups is extremely important.

4.0 Appendixes

5.0 Bibliography

3. 1 – 2 Internet sources