National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Exemplar for Internal Achievement Standard

Physical Education Level 2

This exemplar supports assessment against:

Achievement Standard 91329

Demonstrate understanding of the application of biophysical principles to training for physical activity

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade boundaries.

New Zealand Qualifications Authority

To support internal assessment

	Grade Boundary: Low Excellence
1.	For Excellence, the student needs to demonstrate comprehensive understanding of the application of biophysical principles to training for physical activity. This involves: • evaluating how and why biophysical principles are applied to training • explaining the interrelationship between biophysical principles. The student has evaluated how and why the method of training is applied to training for football (1). The student has also evaluated how and why the principles of training (intensity and variety) are applied to their training (2). The student has explained the interrelationship between biophysical principles (methods/principles of training and exercise physiology) (3). For a more secure Excellence, the student would need to evaluate in more detail the principles of training. For example, specific examples for the principle of training (variety).

Training Log	**Method of training:** Short interval training

Explain how and why the method of training is applied in your training programme.

I used short interval training in my programme because I made one of my goals to improve my 40m sprint time. I need to be working at 90-100% of my MHR as this is what is required for this race. Short interval training is working over short distances at 90-100% of MHR which is specific to 40m as this is an anaerobic event. Short interval training will work my anaerobic system and allow me time to recover my ATP-PC very quickly to that I can perform the next set.

Explain how and why physiological responses are applied to training.

During my training I noticed my heart rate increased quickly and my body temp rose quickly as well. Also my breathing started to get heavy my legs and muscles would tire after each sprint but would restore quickly as the distance I was running was only about 40m each time. As I did more reps of sprints the lactic acid would start to build up, but with training this became less of a problem.

Explain how your chosen biophysical principles _____ and _____ are interrelated.

Short interval training and Anaerobic Energy System.
It was good in relation to my sport because in football you are not always running at a high speed the whole time but you need to be quick off the mark when needed e.g. to get the ball first and when tracking a player back in defense. During these short burst of energy you build up a lot of lactic acid and you are mostly using your anaerobic system. So the longer you can maintain 90-100% of MHR without the onset of lactic acid the better you will be at short bursts of speed you will be. Short interval training is ideal for football as it targets the anaerobic system which is a big requirement of the sport.

3

<u>Task 3: Evaluating the application of biophysical principles.</u>
Evaluate the application of three methods of training you have used in your training programme (continuous, fartlek, circuit, interval (short and long), flexibility, resistance and plyometrics).

Method of Training: short interval training
In my training programme I used short interval training because one of my goals was to improve my 40m sprint time. For this I need to be working at 90-100% MHR in the reps and sets that I stated in my programme. Also I need to work at a 1:10 w/r ratio to replenish the ATP-PC system this rest periods will involve little movement. My heart rate quickly rose to a high rate and at the same time my body temp rose quickly. My breathing became heavy as I completed more reps. My legs tired as I did reps but would replenish CP during my rests. But eventually they would tire more and more from lactic acid build up. In relation to my sport and position in football, this method of training was good because I need to be quick of the mark in order to do things such as get to the ball first. Other methods such as flexibility or plyometrics would not have provided me with the benefits that short term interval training did for what I wanted to achieve which was increase my speed. However, I could have used fartlek training, and possibly could have asked my rep coach about this which could have also benefited my speed work, but I would not have been able to do both with my time constraints, and could have possibly burnt out.

3

1

Evaluate the application of four principles of training you have used in your training programme (frequency, intensity, time, type, specificity, progression, reversibility, rest and variety).

Principle of training 1: Intensity

How did you apply it to your training programme?

I applied this by specifying the intensity I would work at, especially in my interval trainings (long and short). I worked at 90-100% of my MHR as this uses the ATP-PC system to provide the bulk of the energy. I worked out my intensity by getting my MHR by using the formula 220-age. This gave me a MHR heart rate of 203. When I did training I used a heart rate monitor to make sure that I was working at 180-200 BPM.

Why did you apply it to your training programme?

I stated that I would work at an intensity of 90-100% in my short and long interval training. As with short interval training little lactic acid is produced and recovery is rapid. Working at this intensity also was relative to my goal of 40m sprint time and increasing my time of the mark for football which require the use of the ATP-PC system and working at 90-100% MHR**.** Working the long interval training worked my lactic acid system as the reps were longer time periods were lactic acid had a chance to build up. This type of training meant I could get rid of lactic acid quicker and use it for energy like in the anaerobic glycolysis system.

Strengths of training programme – What worked?

The one major strength of my programme, specifically my short and long interval training were the principles of training such as specificity, intensity and variety. Both types of interval training were specific and related to the intensity that I would work at during a match of football, which proved to be extremely beneficial. Working at an intensity of 90-100% allowed my body to adapt to the workload required and also helped to increase the chances of improving my sprint speeds therefore helping me achieved my goals. The specific exercises were very boring, but proved to be beneficial. Completing the sprint work required a great deal of motivation and energy, which I had, however I don't think I could keep this up long term, so should also consider the principle variety for the sprint work. However I used variation in my resistance training, by having a wide variety of exercise it allowed me to work on many muscle groups, once again helping me reach my goals of improving my muscular strength and endurance.

2

Weaknesses of training programme – What didn't?

There were a few weaknesses in my training programme. Although I have really improved my speed in the game of football, I have found that I need to still work on my cardiovascular endurance, eg, feeling like I can give the entire game my best. This would mean adding continuous training to my programme. Although there were lots of benefits from my short and long term interval training, I should have added one long continuous run, eg on Tuesday mornings, I could go for a 50 minute run. This would allow me to be able to work efficiently for the entire game, rather than just focusing on short bursts of speed. Another weakness was one was my long term interval training and that it was straight line. Where as in football you are always changing direction. I may have been better off doing agility training or adding turns to my training.

1

What modifications would you make to the application of the biophysical principles used in your programme?

To improve my resistance training to give me an increased chance to reach my goal of improving my muscular endurance I would lower my 1Rm% from 75% to 60%. This is because I am completing 8 reps of my targeted 15 reps. This means I am not training correctly, I am training hypertrophy. In relation to my sport and goal which is training for muscular endurance. Reducing my 1RM % would allow me to reach my target. To improve my short interval I would also add extra drills

	Grade Boundary: High Merit
2.	For Merit, the student needs to demonstrate in-depth understanding of the application of biophysical principles to training for physical activity. This involves: • explaining fully how and why biophysical principles are applied to training • explaining the interrelationship between biophysical principles. The student has fully explained how (1) and why (2) the method (continuous) is applied to training for mountain biking. The student has also fully explained how (3) and why (4) the principle of training (rest) is applied to their training. The student has explained the interrelationship between biophysical principles (principles and methods of training) (5). To reach Excellence, the student would need to evaluate how and why the methods and principles of training are applied to training for mountain biking. For example, which biophysical principles are the most or least beneficial, giving reasons why, and supporting these reasons with specific examples from the training programme.

Training Log	**Method of training:** Continuous training

Explain how and why the method of training is applied in your training programme.

I used continuous training so I can get fit and more powerful for riding a bike for the mountain bike camp. Therefore I will need to increase my cardiovascular system. This will hopefully result in a fast time for the mountain biking camp. The continuous training is being used because the aerobic energy system is the main energy system that is used when mountain biking. This is the long distance energy system which means it is using oxygen to supply energy.

2

Explain how and why physiological responses are applied to training.

My body started to build up lactic acid during my training but with more training the body is getting better at getting rid of the lactic acid. I am already felling fit during my first week of training. Each training I try and work between 70-85% of my maximum heart rate this improves the ability of the lungs and heart to work together to allow greater amounts of oxygen to reach the muscles that are being worked. Also during this training my body temperature increase and this was seen in the form of sweat and blood going to the skin I became redder.

Explain how your chosen biophysical principles _____ and _____ are interrelated.

The strengths of this training method is that it is extremely specific to what I am training for, mountain biking is almost all continuous when you are riding at 70-85% of your MHR all the time.
One weakness is that it is not all continuous training and that you need some interval and resistance training included to really reach my goal of getting more fit and more cardio vascular endurance. Also muscular endurance will grow my muscles in my legs e.g. bigger quads and calfs and also thigh. This will give me more endurance to go longer in the race with heaps of power and speed, but this could give me more of a steady speed which is specific to trail riding as the fastest to the finish line wins. So building up my leg muscles and cardio vascular system will help me in getting the fastest time. My cardio vascular system needs to be improved as I am unfit and the stich occurs very fast when I am running/cycling, so this is a weakness as it is hard to train without getting the stitch.

Task 3: Evaluating the application of biophysical principles.
Evaluate the application of three methods of training you have used in your training programme (continuous, fartlek, circuit, interval (short and long), flexibility, resistance and plyometrics).

Method of Training: Continuous
On Monday morning I started with a 20 min cycle increasing 10 min per week and did this for 3 weeks. I also did running of Tuesday pm doing 2 loops of the school increasing one lap per week and did this for 3 weeks. The last continuous training I did was 2 laps of the school on Saturday am. All this training was at 75% of my MHR which I found by the formula 220-age. I did this for a minimum training time of a least 25min as this is the minimum time required for training the aerobic system. I started with smaller distances as I was unfit when I started so I increased the distance over the 3 weeks so that I was running double then when I had started. This was for all continuous trainings apart from Saturday am as I had a goal for 85% of MHR as this would push me much more.

1

Evaluate the application of four principles of training you have used in your training programme (frequency, intensity, time, type, specificity, progression, reversibility, rest and variety).

Principle of training 1: Specificity

How did you apply it to your training programme?
This principle of training was used because I was training for mountain biking and leg speed. I made continuous training one of my main methods of training because this related to the sport of mountain biking. When I did resistance training I did my legs because you use these a lot when you are doing mountain biking. Interval training was also important because at times you need bursts of speed for hills and at the finish.

Why did you apply it to your training programme?
I applied this because I am looking to get more cardiovascular and aerobic fitness which is the main component for mountain biking. I am training energy systems and methods of training which are specific to mountain biking, continuous interval and resistance.

Principle of training 2: Rest

How did you apply it to your training programme?
This principle I applied during short and long interval training. The work to rest ratio is the recommended ratio for most beneficial outcome. The training I did was 120sec work time then I had a rest time of 360sec which gave me a work to rest ratio of 1:3. I did 6 reps of this and 4 sets and I had 7mins rest between sets. I also made sure I had a day off from exercise, so my rest day was on a Sunday which also gave me a full day to recover from the weeks work.

3

Why did you apply it to your training programme?
I used rest to make sure my body is recovered enough between sets and so my anaerobic system had time to recover so my body stays at full potential for the next set or training. This will make sure I am getting the most benefits out of training and also not wearing the body down and using all its energy. Rest must be a part of the training programme which is why I did not train 7 days a week, but rather 6 days a week which you can see on my training programme.

4

Strengths of training programme – What worked?
The rest in interval training I had the appropriate work to rest ratio so that my anaerobic system could recover in time to work at maximum intensity for the next set of reps. Also my rest after training making sure the desired rest was being made to not wear my body out.

Weaknesses of training programme – What didn't?
The main weakness was frequency as I did not train some methods for long enough e.g. short interval I only trained for one day. Or the time of the day that methods were being trained for e.g. long interval Monday and Friday evening as it is hard to train when you get home and train at 95% MHR. So I needed to consider the method of training and the frequency/duration of them. I did not plan for reversibility. If I had got an injury and couldn't train I did not have a set exercise or training that I could do while I had that injury.

5

What modifications would you make to the application of the biophysical principles used in your programme?
I would make sure that I had a programme that catered for injury. For example, I would make sure that my continuous training could still happen to that reversibility did not kick in. If I got a mountain biking injury, to keep up my cardiovascular fitness, I could apply the same method but use a different activity, such as swimming or aqua jogging. I could keep the durations and frequencies the same.

5

	Grade Boundary: Low Merit
3.	For Merit, the student needs to demonstrate in-depth understanding of the application of biophysical principles to training for physical activity. This involves: • explaining fully how and why biophysical principles are applied to training • explaining the interrelationship between biophysical principles. The student has fully explained how (1) and why (2) the method (continuous training) is applied to training for rugby. The student has also fully explained how (3) and why (4) the principle of training (variety) is applied to their training. The student has explained the interrelationship between biophysical principles (exercise physiology and methods of training) (5). For a more secure Merit, the student would need to explain more fully the principles of training (specificity).

Training Log	**Method of training:** Continuous training

Explain how and why the method of training is applied in your training programme.
I have used continuous training because I want to improve my cardiovascular endurance for rugby. Doing continuous training will help me in rugby by making me fitter and I can play a faster better game and also last longer cardio wise.

Explain how and why physiological responses are applied to training.
Because I want to improve my cardiovascular endurance for rugby so I can play 100% for the whole game. Doing continuous training will improve my cardiovascular endurance a lot and will definitely help me play 100% for the whole game. Currently I am not as fit as I was last year, and know from the team fitness tests that I need to improve my cardiovascular endurance (for example I got a Level 12 in the beep test last year and only got a Level 9 this year).

2

Explain how your chosen biophysical principles _____ and _____ are interrelated.
The strengths of doing continuous training is that my cardiovascular endurance will increase quite fast and high. The disadvantage is that to accomplish the full potential of the training I have to be fully motivated and the do the exercise at 70% effort all of the time.

Task 3: Evaluating the application of biophysical principles.
Evaluate the application of three methods of training you have used in your training programme (continuous, fartlek, circuit, interval (short and long), flexibility, resistance and plyometrics).

Method of Training: Continuous training
In my training programme I have also been doing continuous training. I have been doing this to increase my cardiovascular endurance. For this to be successful I was running for 25 mins plus 4 days a week at an intensity of 70-85% of my maximum heart rate. My runs had to be over 20 minutes for it to be continuous training. I increased these runs to 40 mins after a few weeks so that it would relate more to the length of the game. The benefits of this work out is cardiovascular improvement and the ability of the heart and lungs to work together to allow greater amounts of oxygen to reach the working muscles. This relates to rugby because I need good cardiovascular endurance to keep up with the game/players. Also having better cardiovascular endurance will make the fitness part of the game easier for me and more enjoyable and I will be able to last the full 80min of the game. I really needed to apply this method to increase my fitness for myself and my team mates so I can be the best player I can be and give my full potential on the field. I believe in the short time that I have applied this method of training, I can see the benefits for myself by feeling fresher on the field, which means that I will play better rugby that will also benefit my team, which is why I wanted to use this method as well.

1

5

2

Evaluate the application of four principles of training you have used in your training programme (frequency, intensity, time, type, specificity, progression, reversibility, rest and variety).

Principle of training 1: Specificity
How did you apply it to your training programme?
All my training days were specific to my sport (rugby). They all had an effect on how it would improve me as a rugby player e.g. continuous training helping me improve my cardio vascular endurance, circuit training improving my muscular endurance and resistance training improved my muscular endurance. These are all aspects that you need for a rugby game.

Why did you apply it to your training programme?
I applied specificity to my programme because you get what you train for. I am playing rugby this season and I want my training to be specific to my sport so I can improve and become a better rugby player. Doing specific training methods like continuous and resistance training will concentrate on improving my specific sport, not something different.

Principle of training 2: Variety
How did you apply it to your training programme?
In my programme there is a lot of variety. I have different methods of training in my training programme so I am improving in lots of different aspects of the body. (I used continuous and circuit). For continuous, I would make sure I ran in different places to make sure there was variety in my runs so I did not lack motivation, for example using the actual rugby field, and then a set run from home using trails and the streets using steep hills and flat parts. If I used the rugby field all the time, I would have got bored, so doing different runs from home added variety for me to keep motivated. Also in circuit training I have different types of activities e.g. skipping speed ladders, push-ups, sit-ups rope climb, pull-ups, boxing. All these activities improve me in different ways also showing lots of variety in my training. The variety of exercises used in circuit training complimented the variety of skills I need for my rugby games.

3

Why did you apply it to your training programme?
I wanted variety in programme because in keeps me interested in training (stops me from getting bored) that's why I did a different training method each day and not the same one. If I did continuous training all the time I would soon get bored and lose interest. The variety of runs kept me excited and motivated, especially because I live in a place where a 25 minute run can be done in lots of different places because there are off road trails and steep streets close by. Also having more exercise and methods of training means doing more exercises to improve different aspects of the body e.g. hypertrophy, cardiovascular endurance agility, etc.

4

Strengths of training programme – What worked?
I think that the variety of my training programme was my strength, I did not get bored because I made sure there was variety with the methods and different runs and exercises.

Weaknesses of training programme – What didn't?
Not doing some runs with other mates to push myself harder.

What modifications would you make to the application of the biophysical principles used in your programme?
Next time I would meet a mate for the runs from home, and probably someone who is a bit faster than me to push myself otherwise I will just cruise along. I could also get my Dad who runs heaps to come with me and show me some more runs around our area.

	Grade Boundary: High Achieved
4.	For Achieved, the student needs to demonstrate understanding of the application of biophysical principles to training for physical activity. This involves explaining how and why biophysical principles are applied to training, using examples from their own experience. The student has fully explained how (1) and why (2) the method of training (resistance) is applied to training for rugby league. The student has also fully explained how (3) and why (4) the principle of training (overload) is applied to their training. To reach Merit, the student would need to explain more fully why an additional method and principle of training are applied, and explain the interrelationship between biophysical principles.

Training Log	**Method of training:** Resistance training

Explain how and why the method of training is applied in your training programme.
I've used this method because for rugby league you need muscular strength, and resistance training focuses on gaining strength. I need to increase my strength especially for my tackles. This was done for upper body strength which is needed for breaking tackles and for tackling other players. I did bench press with heavy weights which is good for building up muscle, I also did squats for my legs which also helped with building up muscle.

2

Explain how and why physiological responses are applied to training.
The bodies response to this is when doing resistance training you are building muscles, when doing resistance training you overload, your muscles tears then rebuilds making your muscles bigger and stronger.

Explain how your chosen biophysical principles _____ and _____ are interrelated.
Resistance training is specific for playing rugby league, but doing too much weights can cause muscle damage like tearing and pulling.

Task 3: Evaluating the application of biophysical principles.
Evaluate the application of three methods of training you have used in your training programme (continuous, fartlek, circuit, interval (short and long), flexibility, resistance and plyometrics).

Method of Training:
During my training I will be doing resistance training on Wednesday and Friday. When I did these trainings I did on

- Wednesday – seated row, back extensions, barbell curls, triceps extension, this focussed on triceps, biceps and back, these are upper body workouts which is needed by any player in a rugby league match. I did 3 set and 10 reps and 80-85% of my RM
- Friday- Strength training focussing on shoulders and chest. For the chest, I did flat bench, incline press and flyes. For shoulders, I did military press and upright rows. These also concentrated on strength. I did 3 sets and 10 reps at 80-85% of my RM. I did 70kgs on the bench and incline press with pyramid sets - First set of 70kgs for 10 reps, second set of 72.5kgs for 8 reps and 75kgs for 6 reps. I used 16kgs dumbells for flyes with the same pyramid setting. For shoulders I did 25kgs military press for 10reps then 27.5kgs for 8 reps then 30kgs for 5-6 reps. Upright row were the same weight and reps. The benefit of this type of training is that it creates an intense routine and overloads the muscles so strength is gained and muscle is gained through the tearing of myofilaments.

1

Evaluate the application of four principles of training you have used in your training programme (frequency, intensity, time, type, specificity, progression, reversibility, rest and variety).

Principle of training 1: Specificity
How did you apply it to your training programme?
In my training I used specificity by looking at what was needed for a rugby league player e.g. strength speed and agility. I applied this principle by doing specific exercise for these needs.

Why did you apply it to your training programme?
I applied specificity to my training because you get what you train for. I am a forward in rugby league and so a forward needs strength and size to be a good player. These are the assets that I worked on relating to rugby league.

Principle of training 1: Overload
How did you apply it to your training programme?
I used overload by doing a lot of weight trainings and when I did the exercises like barbell curls and triceps extension I would increase the weight in some training sessions but keep the reps at the same number this was overload. A specific example of where I applied overload is when I went from10kgs on the arm curls and then added another 2.5kgs after each set of reps. So I did 3 sets of 10 reps and added 2.5kgs after each set. In week five of my programme I also added extra reps to my programme by doing 12-15 reps.

3

Why did you apply it to your training programme?
I applied overload to my training programme to build strength in the upper body and this will have a positive effect on my performance. You need to keep overload to gain strength otherwise my body will just keep doing the same thing all the time and won't gain any strength. This is a mistake I was making when I went to the gym and just lifted the same weights each week, eg I was always doing 3 sets of 10 reps tricep extensions at 10 kgs. I applied overload because it will help me build strength faster by doing increasing the weights and number of reps. This means that I will eventually see some slow gains in my strength which will hopefully be noticeable on the field when I can tackle with more strength.

4

	Grade Boundary: Low Achieved
5.	For Achieved, the student needs to demonstrate understanding of the application of biophysical principles to training for physical activity. This involves explaining how and why biophysical principles are applied to training, using examples from own experience. The student has explained how (1) and why (2) the methods of training (resistance and continuous) are applied to training for a strengthening programme. The student has also explained how (3) and why (4) the principle of training (rest) is applied to training. For a more secure Achieved, the student would need to explain in more detail how and why the principle of training (intensity) is applied (5).

Training Log	**Method of training:** Resistance

Explain how and why the method of training is applied in your training programme.
I used resistance training in my program because I have got very mobile shoulders and use exercises such as rotator cuff lifts with light weights as I am trying not to injure it. This is specific to my goal because I stated with my goals that I am trying to strengthen my shoulder.

2

Explain how and why physiological responses are applied to training.
Resistance training is specific to my goals because I need to strengthen my shoulder for tennis and I am using resistance because I am using weights for a short period of time. I was doing 2.5kg weight with 3 x 10 reps slowly so I can gain from the exercise, and I am using muscular endurance.

1

Explain how your chosen biophysical principles _____ and _____ are interrelated.
The method of training I am using is resistance training and I am using muscular endurance using light weight with minimal rest at about 50-75% of 1rm with 3 sets and this is specific to my goals

Training Log	**Method of training:** Continuous

Explain how and why the method of training is applied in your training programme.
I used continuous training in this period because we went and done a spin class and this related to my goals. I did continuous instead of resistance because I am trying to lose fat and increase my cardio respiratory system and to do this you need to work for longer than 25 min. I also want to get fitter and using my aerobic energy system to lose fat. Because those are my goals.

2

Explain how and why physiological responses are applied to training.
After 40min on the spin bike working at set rate by the trainer it was a really good training session because I got a good workout because we were using continuous for longer than 25 min and I was at my target heart rate most of the time and I was sore as after. This relates to my goals because I am trying to strengthen my shoulder.

1

Explain how your chosen biophysical principles _____ and _____ are interrelated.
The strengths of this training session was that I used most of the F.I.T.T principles. This training session relates to my goals I set and continuous training was the method of training to my training session and I was working at my target heart rate 70-80% of MHR and I was using aerobic energy system because I was working out longer than 3 mins.

Evaluate the application of four principles of training you have used in your training programme (frequency, intensity, time, type, specificity, progression, reversibility, rest and variety).

Principle of training 1: Intensity
How did you apply it to your training programme?
I applied intensity to my program by using my BPM/MHR as a measure so I knew what intensity I was at. My measure showed that I was working at 80-90%.

5

Why did you apply it to your training programme?
Because it related to my sport of badminton and tennis, because you have start stop moments in the game. I need to last in a game because currently I am running out of energy. It also relates to aerobic based training at 50-85% of MHR because it is recommended.

5

Principle of training 2: Rest
How did you apply it to your training programme?
I applied rest to my resistance training because when I was doing weights I had a rest in between the reps and the sets of about 2 min between reps and sets. So I would do 1 set of reps then have a rest for 2 min before doing the next set. I also had a rest between doing the methods of training. I wouldn't do resistance training two days in a row. I would do resistance training then continuous training so that my muscles could get a rest.

3

Why did you apply it to your training programme?
I applied it to my training because in between 15 reps x 3 I needed a little amount of rest to let my shoulder muscles rest and stop hurting so I could then carry on with the next reps and set. I liked having a rest day and including rest periods in my programme so I could rest my muscles and then get the benefit of working hard for the next session rather than having tired muscles with no rest.

4

Strengths of training programme – What worked?
Continuous training because I really liked the spin classes and they made me fitter. I think that the resistance training strengthened my shoulder a little bit. Doing spin with others made me work hard, so I enjoyed it more.

Weaknesses of training programme – What didn't?
Not knowing if the amount of weight I was lifting for my shoulder was right or not.

What modifications would you make to the application of the biophysical principles used in your programme?
Check with my physiotherapist if I should increase the weights when using resistance training so I can build on my strength in my shoulder.

	Grade Boundary: High Not Achieved
6.	For Achieved, the student needs to demonstrate understanding of the application of biophysical principles to training for physical activity. This involves explaining how and why biophysical principles are applied to training, using examples from own experience. The student has explained how and why the methods of training (continuous and fartlek) are applied to training for tennis (1). To reach Achieved, the student would need to explain how and why the principles of training of specificity (2) and rest (3) are applied.

Training Log	**Method of training:** Continuous
Explain how and why the method of training is applied in your training programme. I used this method of training because my goal was to get fitter and reduce my body fat and I like biking, so thought this method would be good for me. I also wanted to keep my legs moving on the bike so I did this for 30 minutes to improve my fitness for tennis. I don't think I am fit at the moment, so doing this 3 x per week should help me reach my goal if I keep doing it.	
Explain how and why physiological responses are applied to training. My heart rate increased as soon as I had been cycling for a good 30 sec. I began to feel the lactic acid in my legs. My body temperature went up and I began to feel the sweat.	
Explain how your chosen biophysical principles _____ and _____ are interrelated. I was able to continuously cycle for 30 min and being able to stay in the aerobic training zone. My weakness was that I should have done this more frequently.	

1

Training Log	**Method of training:** Fartlek
Explain how and why the method of training is applied in your training programme. I used this method of training because my goal was to improve my movement around the tennis court, because I am not quick enough to return the ball sometimes. I did this by doing regular bursts of speed running at my MHR every 2-3 minutes while attempting to run 3 laps around the school. This would be like chasing the tennis ball on the court, sprinting after the ball and then waiting for the return.	
Explain how and why physiological responses are applied to training. I could feel the lactic acid running through my legs during the sprinting and definitely after. My heart rate increased majorly after the sprints.	
Explain how your chosen biophysical principles _____ and _____ are interrelated. My strengths were that I was able to go without stopping. My weakness was I could have made a better effort by sprinting more frequently.	

1

Evaluate the application of four principles of training you have used in your training programme (frequency, intensity, time, type, specificity, progression, reversibility, rest and variety).

Principle of training 1: Specificity
How did you apply it to your training programme?
Continuous training
X 3 per week
70-85% of max heart rate

2

Why did you apply it to your training programme?
Because I stated in my goal that in wanted to improve my cardiovascular endurance decrease my body fat and work on getting fitter.

Principle of training 2: Rest
How did you apply it to your training programme?
Continuous training
3x per week
Rest every maybe 15min depending on whether I was biking or running

3

Why did you apply it to your training programme?
To let my body recover after and during my training programme. Maybe after or during a hardworking session.

Strengths of training programme – What worked?
Continuous training because I really liked that sort of activity.

Weaknesses of training programme – What didn't?
Fartlek training because I don't really like to push myself too hard.

What modifications would you make to the application of the biophysical principles used in your programme?
Probably set myself more realistic goals and then maybe try other methods of training that I would be more into. I think I could train up to 5 times a week.