Poor information processing

Rugby - sidestep

C1- Sidestep

Experience, DCR, Sensory Information.

I attempt to use sidesteps in my gameplay more often to evade contact and break the gain line. The sidestep can be improved by working on my agility, however like most skills the best way to improve it is practice and being able to recognize when the most effective time to use it is. For example body angles and the where the oppositions centre of balance is as you approach them, so that you can attack the weak side. This is particularly applicable, it is all about being able to register the stimuli and compare them to previous experiences and select the correct motor program. In comparison to my chosen elite performer, I do not register the stimuli from the display as efficiently as he does and the information takes longer to pass through my model of information processing as a result of him having practiced the skill more than me, in both an isolated and competitive environment. He will also have a larger variety of previous motor programs that have been stored in his long term memory which can easily and quickly be selected to utilise in different scenarios.

As the sidestep is an open skill, there are many external factors which can affect the execution of it, therefore confirming the importance of having that practice/experience to aid the decision making element.

Selective attention plays an important part in any skill, it is the ‘ability to filter out any irrelevant information from the display in order to allow you to focus on the important information required’ to complete that skill. With a sidestep I haven’t mastered the ability to use selective attention to benefit my execution of the skill to the same level as Cooper. I can occasionaly be distracted by other players that aren’t directly going to affect the situation. This leads to me sometimes failing to execute the sidestep as my focus is elsewhere, in comparison, Cooper will have more experience of having to deal with multiple stimuli simultaneously and have trained to discard the unnecessary information.

The more stimuli that are present at one time, leads to a delay in reaction. This can be explained through the ‘Single Channel Hypothesis’. It states that you are only able to register one stimulus at once, and you have to wait for the first stimulus to be completely registered before focusing on the second. This leads on to the Psychological Refractory Period, which says that there will be a delay in reaction if one stimulus is presented shortly after the first. You have to register the initial stimulus first therefore if a further stimulus is presented then there will be a delay/hesitation in reacting. This explains how the sidestep works well, because it effectively puts this directly in to place for the defender having a change of direction representing the second stimulus. However, unfortunately the psychological refractory period also occurs when performing a sidestep as an attacker. This is because there may be a drifting defender behind the initial line, this can throw me off focus and I have to read his movements as well as the first defenders. But as we know, this cannot be done at the same time, therefore it can cause me to be caught flat footed and caught in possession as I panic with too much information from the display.

In conjunction with this, Cooper has a greater level of anticipation, which he has gained from experience, it has allowed him to predict the movement of defenders. Once again contributing to his ability to read the game. I am often unable to anticipate the opposition movements and heavily rely on present movements.

The concept of response time equalling reaction time plus movement time, suggests that if my reaction time to the stimulus is negatively affected by the inability to discard irrelevant information and anticipate future movements will have an effect on my overall response time, causing me to not complete the movement in time and be tackled.

C2- Developing Information Processing Through DCR, and Improve Response Time

Experience is a difficult thing to work on in training, as you would gain the most benefit from match practice. However, I can improve my ability to recognise different stimuli and speed up the DCR process through setting up specific drills. I would initially set up a one on one situation, and attack the defender. This would get me used to manipulating the opposition in to an off balance position, and allow me to attack this weak area. I would gradually progress this by adding in more defenders, creating more stimuli to consider. As a result of there being more stimuli present in the display it would improve my selective attention through me having to eliminate the other players and solely focus on the player I am attacking and possibly the defender to the side of him. With varied repetition, this would vastly improve my ability to effectively focus on the important aspects in a match. Continuing with the same drill, I would give the defenders more freedom on the style of defence they will use, which gets me to think on my feet. This will begin to improve my anticipation as I build up multiple motor programs and can predict what the opposition may do in a game if I have seen it before in training. This increased freedom for the defenders replicates a game situation as close as possible as I don’t know what the defence will be doing in a game.

It is also essential that I improve my reaction and movement time, resulting in an overall improvement in response time and allowing me to perform the sidestep as efficiently as possible. To improve my reaction time I need to train myself to respond to different cues quickly, to replicate the variety of information produced in the display within a match. This can be done through repetition/practice, using mental rehearsal. Movement time can be improved by developing my fitness to reduce the time taken it takes to perform the action. The main aspect of my fitness I would look to improve directly linked to the sidestep is agility. Therefore, I could use the Illinois agility test to see these results. The test involves mastering a course of cones, testing your footwork and change of direction, ideal for developing a sidestep.

Downhill Biking – rock sections

**C1 Rock sections – Slow response time**

Response time. Info processing, selective attention, DCR, reason for – experience, reaction + movement = response, anticipation – surfaces.

Rock sections are extremely technical, containing many large rocks where learning the exact location of every one is almost impossible. Being able to respond quickly to a sudden obstacle such as a rock is an essential trait for a downhill rider. Riders continuously have to react to obstacles and change their body position and direction of bike movement in a split second. Meaning good response time is a huge asset. No matter how well a rider learns a track, there will always be moments when they are thrown off line, or come across a rock that has been loosened out of place by the last rider hitting it. And subsequently have to quickly react and steer the bike clear to avoid a crash or lose time. Reaction + movement = response. This means that response time is the time it takes for a rider to identify the stimulus and make the movement required to react to that stimulus. Taking this into account makes response time essential for downhill riders.

When riding a downhill track, the rider will have to constantly switch between and compare information that they are receiving through their senses to information that they have stored in their long term memory on how to react to that stimulus or situation. The short term memory and long term memory essentially work together in order to help the rider make the most appropriate decision or course of action to take. When a rider is coming up to a rock section, they know by experience (LTM) that they must change their body position, speed of entrance and where they are looking. As they enter the rock section the rider must constantly make small adjustments (STM) to their body position to counterbalance the bike hitting rocks and being thrown off line. Following on from this the rider can then use their experience of how to react to a rock garden and how they tackled it when practicing (LTM) to make appropriate adjustments to their line or body position. When riding the rock section the rider will continuously be using information from his senses and information that they have stored in order to ride the rock section effectively. The better the rider, the faster they are able to process this incoming information and subsequently make an appropriate decision on what course of action to take. This is an area that I clearly have to work on, to improve both my experience and reaction time to be able to ride rock sections more quickly and in control.

Equilibrium and kinaesthesis are both important elements of proprioception in downhill. Equilibrium is essentially balance, and is our feeling of tipping or turning. Our brains are essential in controlling our balance, and balance is important in downhill where a rider is constantly balancing themselves on a bike that cannot stand upright on its own. Kinaesthesis is the sense that provides us with information about our muscles, and how powerfully they are contracting. This information is sent to the brain, where it is processed and counter movements may be applied. Having good kinaesthesis means a rider will be constantly aware of their body position, meaning they could more easily change it if necessary.

Riders are constantly receiving information from their senses. These may include the conditions of the track (if it’s wet or dry), the size of a berm, position of a rock, noises from spectators or how far down the track they are. These are only a few examples of the constant amount of information that we receive. We actually receive so much information that is impossible for us to compare and recognise all of it. Therefore the vast majority of it must be ignored. When receiving all of this information it is essential that a rider is only concerned with things that are relevant to them on their race run. The noise of the crowd for example is irrelevant and the rider should ignore in order to avoid being distracted and potentially making a mistake. Instead the rider should concentrate on the important stimuli such as conditions or position of rocks. If a rock section is wet then it will most likely be more slippery than if it was dry. Therefore the rider must take this into account before riding it. This filtering out of irrelevant information is called selective attention.

When we receive and identify a stimulus, our DCR process takes place. This is where we compare the stimulus to information stored in our memory, and hopefully recognise that stimulus so that a response can be made based on previous experience. DCR stands for detection, Comparison and recognition.

* Detection is the process where we register the stimulus. This registering is done when the sense organs send the information to the brain where it can then be processed. My sight will detect a rock section ahead.
* Comparison is where the stimulus is referred back to the memory, where it can be compared to previously stored stimuli, and an appropriate response can be made. The stimulus of an incoming rock section will be sent to the brain.
* Recognition is where the brain matches the stimuli to a corresponding one that relates to the same situation. Meaning the most appropriate past stimuli is chosen to aid in the current response. The correct movements and preparation for the rock garden will be made due to current situations and past experiences.

I do not possess the same amount of past experiences as an n elite performer does. This is portrayed in my relevant lack of experience. Elite performers will have far more experience than me both generally and in specific situations like rock sections. Therefore their ability to relate back to past experiences will be of higher quality and more efficient than mine, meaning they will be able to select a reaction more quickly. This is why it is vitally important for me to gain more experience as this will undoubtedly improve my performance and quality of reactions.

**C2 Rock section – Practice and visualisation**

In order to improve my response time, I must also take the correct measures in ensuring that the processes of response are also improved. Meaning selective attention and memory retention must also be improved in order to improve my overall response time, and the success of my responses.

**Improving selective attention:** Selective attention is essential when improving response time. The ability to filter out and divert my attention toward important stimuli is the first step in improving response time. To improve my selective attention I will have to practice more. Practicing and simulating the experiences and stimuli present when racing will help improve my selective attention. This means I will have to practice on a range of different tracks, to help build my experience of dealing with different situations and outcomes. Practicing a race track before I race it is also extremely important. Already having those past experiences for the exact track I am racing on will help further improve my responses. As the past experiences I have will directly relate to what I am riding. It would also help me to have a mentor. This would help as the mentor would be able to pick out appropriate cues for me to concentrate on, meaning it will help make these cues more obvious when I am actually racing.

**Improving memory retention:** By improving my memory retention I will be able to hold past experiences in my memory more effectively, meaning I could more easily relate current stimuli to the past experiences that I have. Again the most effective way to improve this is by practicing. If I practice the same sections of track over and over, I will eventually withhold the stimuli that are associated with my success on that section of track. The irrelevant information such as those attempts where I made a mistake will be forgotten as my process of selective attention will only retain the useful information. Mental rehearsal will also help to withhold details of the track such as rock gardens and my line through these obstacles. By imagining myself riding the track in my head, I will be able to rehearse my lines and will be more likely to remember certain sections of the track. This will be especially useful for rock gardens where there is a lot of information to take in due to the large numbers of rocks. Rehearsing it in my head will help me to remember my line through the rock garden more easily.

**Improving reaction time:** Reaction time is probably one of the most important aspects of downhill racing. Especially in the case of a rock garden where the bike is constantly being thrown around and not being able to react to an upcoming rock will most likely result in a crash. I must be able to constantly change my position almost instantly to be able to avoid hitting a large rock; therefore it is extremely important to improve my reaction time. Similar to selective attention and memory retention, reaction time can be improved through practice. By practicing on a wide variety of rock sections I will be able to improve my reactions to certain situations. It is for this reason that my practicing sessions should be on different rock sections and not just one or a few. If I was to practice on only one rock section then my knowledge of the placement of certain rocks would not warrant fast reaction times, as I would have remembered where each rock is. Therefore by practicing on a range of rock sections I will improve my reactions without being able to memorize the exact locations of each rock. My experience of detecting relevant cues will also improve meaning my decision making process will also be quicker. Practice sessions before a race run are extremely important for reaction times and overall success on a rock section. This will improve my expectancy as I would have previously ridden the section and will know on what section of the track the rock section is located and my exact line through it. Physical training will also help improve reaction time. By increasing the strength of my muscles I will be able to carry out muscular contractions more quickly and therefore will be able to quicken my response. This should be taken into account in my normal physical training regime, Plyometric training will be especially useful as it improves power, which allows for quick movements.

By improving these three areas of response I will be able to significantly improve my general response time. Identification of relevant stimuli will become quicker and my decision making will be more efficient. My increased physical strength will also help to improve my response time. By practicing the section of track before my race run I will be able to come into my run with prior knowledge of what to expect, meaning my response time will again be quickened.