Research article

IMAGERY AND MODELING - IMPACT ON RUGBY SKILL PERFORMANCE: SINGLE CASE MULTIPLE BASELINE ASSESSMENT ACROSS PARTICIPANT

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Abstract

Journal of Sports Science and Physical Education 6(2): 10-27, 2017 – The aim of this study is to evaluate the effects of audio imagery and video modeling on performance in rugby sports. The single case multiple baseline across participant (ABA) method are used to evaluate the participants' performance. It assesses the impact of physical training, audio imagery and video modeling on the passing and tackling performance (open loop) for 13 tournaments. Four participants under 14 years old, representing schools in various rugby competitions were selected as participants. The frequency of intervention is three sessions per week. The Sport Imagery Ability Measure (SIAM) questionnaire which has been translated into Bahasa Malaysia is used as a screen to see participants imagery abilities. Research is conducted by creating interventions on audio and video imagery of expert models conducted with physical training based on the Imagery Training Program (ITP). Real-time recording methods and notational videos are used to assess participants' performance. The contest video rating was evaluated by two experts and analyzed separately. The findings showed that there was stable performance for all participants in phase baseline (A). There was increase in performance for all participants in the intervention phase (B). Only one participant with 5 weeks intervention was able to maintain performance in withdraw phase (A1) compared to other participants.

Keywords: Imagery and Modelling, Rugby Sport, Intervention, Open Loop

INTRODUCTION

Performance is an important aspect in every sports field. Good performance ensures success in sports that are individually or team. Meanwhile, skills involve two aspects that are closed skills or open skills. Rugby is a competitive sport that contains both closed and open skills. Therefore, it requires the best level of performance to ensure team victory. Among the key skills in rugby sports are the skills in passing and tackling. The International Rugby Board (IRB, 2013) describes the passing and tackling skills are important aspect of the rugby game to determine the result of the match. Kossert and Munroe-Chandler (2007) point out that most athletes are still using the traditional method of skill training simply to improve performance. Meanwhile, according to Pavely, Adam, Francesco, Larkham and Maher (2009), in rugby sport should be given emphasis on psychological aspects to enable athletes to improve overall performance and reduce the risk of injury. This psychological exercise is important doesn't only provide the best athlete's performance but also helps improve self-efficacy, athletic focus and motivation (William & Cumming, 2011; Malouff, McGee, Halford, & Rooke, 2008). Morris, Spittle, and Watt (2005) explains that imagery training can help athletes in speeding up the performance improvement process. Meanwhile, Boyer, Miltenberger, Batsche, & Fogel, (2009) added that the modeling method can also help athletes imitate the behavior of a skilled man in order to facilitate the understanding of the next action to improve the athlete's performance to the optimum level. Therefore, this study will combine both methods of imagery training and modeling in an effort to accelerate the performance of rugby athletes.

Imagery Audio and Video Modeling

There are various interpretations of the imagery in the past study. However, in the opinion sports contacts expressed by Morris et al. (2005) has been widely adopted. Imagery by Morris et al. (2005) is the process of rebuilding old or new experiences just like the real situation while Roberts, Callow, Hardy, Markland, and Bringer (2008) defines imagery as the use of various senses to recreate the experience in the mind. Burton and Redeke. (2008) and Smith, Wright, Allsopp, and Westhead (2007) explain that the imagery is a cognitive process that is found to improve learning and performance on motor skills. The multi-sensory (visual, kinesthetic, auditory, gustatory and tactile) features implicit in image representation will be present during this mental exercise. The visual process requires the involvement of all our sensory organs as well as the imaginable events quite evident in the form of brain stimulation very close to reality (Reiser, Busch, & Munzert, 2011). Therefore, athletes can benefit from imagery training to reinforce, detail, explore, remember new or old sports skills as well as for specific purposes such as strategies, tactics and sports techniques and sports recovery (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008).

Video modeling techniques are the process of reinventing the skills seen. Video modeling techniques require appropriate and diligent training in order to get the optimal impact

on selected skills. Research on aspects of physical modeling and training is often a matter of interdependence in applied psychological studies. Wilson (2008) explains that video method is an effective way of learning skills, because all the difficult tasks to describe verbally can be learned effectively through demonstration methods. Harvey and Gittins (2014); Trout (2013) and Reo and Mercer (2004) found that the applied video modeling techniques were more effective than traditional learning to achieve precision and progress in the movement.

In an effort to build more effective and practical interventions on athlete's performance, some researchers combine various technological innovations. One of the most popular techniques is the use of video modeling and athlete feedback on performance (Morris et al. 2005). Ram, Riggs, Skaling, Landers, and McCullagh (2007) explains that modeling is an observation of a particular expert or model of a particular skill to be learned. Bellini and Akullian, (2007) explain that modeling is a behaviour model in which learning takes place through observation followed by the impersonation process as a behavioral enhancement. Meanwhile, SooHoo, Takemoto, and McCullagh (2006) states that modeling is a cognitive process in which students see and mimic the behavior or skills of other individuals. Social learning theory is one of the theories that describes the modeling process (Bandura, 1986). This theory also explains the learning of this observation is about how the concept of impersonation makes humans more skilled at the one desired skill. The social learning theory has suggested that learning through observation of the model is very powerful (Baudry, Leroy & Chollet, 2006). Various studies have found and demonstrated that modeling is effective in providing learning and performance enhancement (Nelson, Czech, Joyner, Munkays, & Lachowetz, 2008; Ram et al, 2007). However many researchers study this aspect of imagery and modeling in a single aspect, no merger between the two as imagery studies by Post et al. (2010); Smith et al. (2007) and Kossert & Munroe-Chandler, (2007) while modeling by Caserta and Singer, (2007) and Clark and Ste-Marie, (2007).

Although there are studies that separate these two aspects, there are also researchers who argue that imagery and modeling are two things that are almost identical (Ram et al., 2007). Both of these things are imagery and modeling actually use cognitive performances, training and skill sequences. During the process of information modeling regarding a skill was coded into cognitive storage. Similarly, imagery where in the imagery, images are presented from memory storage. According to SooHoo et al. (2006) although imagery and modeling have a process equation, what distinguishes them is the locus of the initial stimulus. Imagery is a cognitive process involving the reincarnation of the internal sensory stored in memory and performing tasks without external stimulus. Meanwhile, modeling is a skill criterion that is manifested through external stimulus. In the study involving modeling of video presentations or directly is often used as learning observation modes, meanwhile the imagery is where participants will build mental images from past experiences or new experiences with scripts provided by researchers.

This study is to look at the effects of psychological training (imagery, modeling, imagery and modeling) conducted with physical training on performance in rugby sport on open skill aspects (tackling and passing).

Theoretical framework

Theoretical framework used to describe the imagery of performance is the theory of bio-information by Lang (1979, 1977). This theory has found that the attention of many researchers because the intervention based on this theory has contributed to improved performance in sports (Callow, Roberts, & Fawkes, 2006). Lang explains that the imagery is a set of suggestions or things that work in an organized way that is stored in long-term memory. Modification of proposals or suggestions will lead to behavior change. Lang also proposes all knowledge can be presented in memory as a unit of information about an object, relationship and event known as propositions. Just adding, there are three basic categories in presenting imagery known as 'stimulus propositions', 'proposition response' and 'meaning propositions'. Stimulus proposition is related to external environment, proposition response is motor activity and automatic change. When individuals engage with the imagery, they actually stimulate stimulus parts (which contain image content) and parts of the response or response that function as stimuli in the situation. According to Lang again learning and performance are two things that are interconnected through the imagery. Through repetition of imagery performance, training will enable the individual to adapt the state of the stimulus and the best response.

Objectives of the study

This study was conducted to evaluate the impact of audio imagery training programs and video modeling on rugby sport performance on passing and tackling skills.
Specifically, the objective of this study is to:

i) evaluate the impact of imagery audio and video modeling training programs on passing and tackling performance in baseline phase (A).
ii) evaluate the effect of the imagery audio and video modeling training on passing and tackling performance in the intervention phase (B).
iii) evaluate the effect of imagery audio and video modeling on the performance of passing and tackling at withdraw phase (A1).

LITERATURE REVIEW

In sports psychology, there are many previous studies that demonstrate the effectiveness of imagery training with sports performance (Smith et al., 2007; Bell & Thompson, 2007; Morris et al., 2005). Driskell, Copper, and Moran (1994) explain that most recent studies have generally

proven that imagery training has the benefit of improving sports performance, as well as Short, Ross-Stewart, & Monsma (2006), more than 200 studies conducted the use of imagery provides very positive feedback on performance improvements.

In achieving the desire to build and improve performance, athletes should use the imagery continuously and systematically as performance improvements do not occur dramatically (Malouff, McGee, Halford, & Rooke, 2008; Mamassis, & Doganis, 2004). Imagery skills should be noted as most athletes report that they use the imagery regularly before the competition (Robin et al., 2007). However, the impact on overall performance is still unclear. Some studies have shown that it has positive effects and some have reported the opposite (Gould, Damarjian, & Greenleaf, 2002). Athletes typically use positive imagery as part of their routine to improve their performance and perform at optimum levels (Cumming, Nordin, Horton & Reynolds, 2006). Meanwhile, Short, Bruggeman, Engel, Marback, Wang, Willadsen, and Short (2002) added that studies on physical education and training science students at a university have been tested to detect modifiable imagery and self-efficacy of golf putting skills. The findings show that performance improvements are not only in the use of modified imagery but also enhancing self-efficacy in golf putting tasks.

An explanation of why some studies find that different results are due to individual difference factors affecting learning, performance and cognitive (Vealey & Greenleaf, 2006). Researchers are unable to control the imagery, control and past abilities of the athlete. The ability of the imagery to have two influential factors is how the athlete's clarity can see the image and how detailed the image appears to them and the athlete's ability factor to manipulate the image aspect as the desired change (Vealey & Greenleaf, 2006).

When talking about video modeling with the imagery, it is actually impersonating the order of the treatment by the expert who made the sequence of treatment successfully and then kept the behavior in mind and made the same exercise as in the memory of the savings. Caserta and Singer (2007) test the impact on video modeling and imagery on tennis players. The results show that mental training as a whole can improve performance. Caserta and Singer (2007) concluded that the combination of mental training (using video modeling) and physical training was as good as the use of video modeling as well as imagery. Caserta and Singer (2007) also explain that by studying the responses of a situation through video modeling, responses to learning will increase.

Ram, et al. (2007) has concluded that this modeling technique not only enhances the skills of elite athletes but is also effective for novice athletes in combination with physical training, and it is better than practicing physically only. Ram, et al. (2007) also explained through their study of weightlifting participants, the results showed no significant increase. It is very difficult to imagine imagery. This is because the results of their studies do not show an effective increase compared to video modeling. Imagery is more effective if accompanied by physical training than just doing physical exercises alone.

METHODS

This study was conducted using a single case multiple baseline across participant (ABA) method to evaluate the effect of imagery training interventions and modeling on open skill (passing and tackling) performance at rugby tournaments throughout the year. Barker, Mccarthy, Jones and Moran, (2014) argue ABA method is a robust research design as the assessment is conducted continuously and repeatedly. In particular, phase A is also known as a baseline phase where this phase of physical exercise routines is routinely performed and no intervention is introduced. The intervention phase (B) was introduced when the participants' performance was stable in the baseline phase (A). After the intervention process (B) the participant returns to the second baseline phase or named with the term withdraw (A1). This is to see whether the interventions can result in continuous improvement and retention of performance (Barker et al., 2014). The participants' performance on open skills is measured consistently throughout the A, B and A1 phases. Comparison of participants' achievements is performed each time after the tournament and at the end of the study. This study involves a period of almost five months, according to the actual tournament schedule. Multiple baseline across participant in particular means the duration of each participant in the baseline phase (A) is different and indirectly intervening time interval (B) the participant will also differ but withdrawal phase (A1) all participants are the same (Morgan & Morgan, 2009) . Interventions run on each participant are three times a week.

Participants

Four students participated in the rugby team of 14-year-old Hulu Selangor Science School and represented the school rugby team involved in various tournaments. For this study, the selection of participants was based on a discussion with the coach. Among the criteria required in the selection of participants is they must be a main player and have played in every match and not injured. Players also have never been involved in any previous psychological skills training. After the SIAM test, four participants who met the criteria were selected as a study. Participation of participants in this study is voluntary.

Before collecting data, participants will be informed about the purpose of the study to be conducted. Parents' consent letters will also be given to participants to be signed as an agreement of consent.

Instrument

Sport Imagery Ability Measure (SIAM) questionnaire by Morris et al. (2005) (BM) is divided into two parts, the first part contains information related to the subject's demographics while the second part contains four imagery activities where each activity has twelve questions. Participants will be asked to create an imagery on the situation that has been heard. The time to retire is for 60 seconds. Then the participants will respond to twelve items that are the basis of

five dimensions of imagery (image clarity, image control, image speed, ease of image creation and image generation time). It also involves six senses while performing the imagery (visual, audio, kinestatik, taste, smell and touch).

Imagery and Modeling Logs

All participants are provided with imagery and modeling logs. Participants are required to complete the logs. The purpose of these logs is to ensure that participants follow the training schedule, duration, and number of interventions that should be done.

Interventions

Audio Imagery and video modeling
The passing and tackling imagery scripts are provided in audio form. This imagery script focuses on improvements in passing and tackling behavior. Each script is guided by guidelines issued by Morris et al. (2005), ITP model and Lang's bio-informational theory (1977, 1979). Each script contains stimulus and response aspects. The stimulus aspect explains the scenario imaged by the spectators, the opponent's position in the attacking state and the ball spins in your direction. The response is the action of the particular situation as you are passionate about the presence of the audience, and you continue to do the perfect tackle to the striker without any trace and you feel the rough texture of the ball enters your fingers and holds the ball confidently.

The video modeling used by the researcher is at the World Rugby Championship (WRC) action 2015. The video clip produced is of perfect and successful behavior for passing and tackling skills. These two video modeling are downloaded from the YouTube application. The speed of the clips is in slow motion. O et al. (2015) explains that slow motion techniques are an appropriate method for improving one's skills especially to novice athletes. The duration of the video modeling is less than 10 minutes.

Data Collection

All participants' action was recorded throughout the tournament (13 tournaments) using two HDR-PJ444 video recorders placed on the side and behind the rugby line. Tournament video recording clips, notational analysis videos are used to assess the performance of participants in each competition. Expert panels that understand the notational analysis techniques are used to assess participants. This expert's assessor (level 3 coaching level of the Malaysian Rugby Union, MRU) is based on expert definitions by Ericsson and Smith's (1991).

Analysis Data

Imagery and modeling log are checked to ensure that all participants complete the intervention. The performance of passing and tackling skills for each individual is calculated separately in tournaments in each phase of ABA and plotted into individual graphs. Visual inspection methods are used to analyze the performance decisions of each individual. The performance data of the study participants will be plotted using the Microsoft Excel Software 2010. Individual graphs are evaluated to see the level of change of mean in each phase, tendency or trend and level (Thelwell, Greenless, & Weston 2007; Hrycaiko & Martin, 1996). According to Hrycaiko and Martin (1996), this visual inspection graph is used to see if there is a stable achievement in the baseline phase, the effect of repetition process on the participant itself, data points that are at variance in the baseline phase, intervention and withdraw. The split middle technique (White, 1972, 1974) is also used as part of statistics to build trend lines. Three criteria evaluated in visual inspection individually are changes in mean, changes in levels, changes in slope or trends.

Passing Skill Results

Participant 1 (Harris)
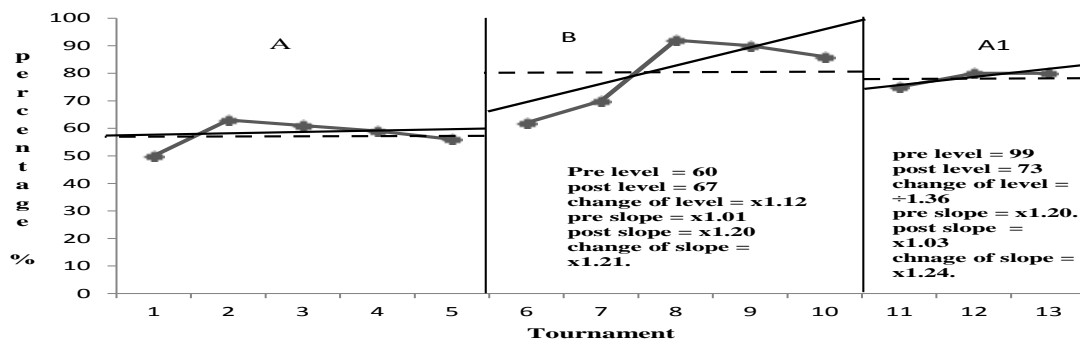
Mean for Harris' passing skills is 57.8% in baseline phase (A). At phase (B) it increased by 22.2% to 80%. At phase A1 it decreased by 1.7% to 78.3%. Interventions during the five tournaments show a mean achievement of Harris passing increase in phase B, when interventions are introduced. If the intervention is stopped at phase A1, the mean starts to decrease slightly. Mean phase A1 is better than phase A. Trend achievement of all three phases is increasing. The direction of slope in all three phases is also positive. The phase change from phase A to B is increased but the decrease occurs in phase B to A1. The interventions during the five tournaments showed an increase in phase B and could almost be maintained at phase A1.

Participant 2 (Eizzul)
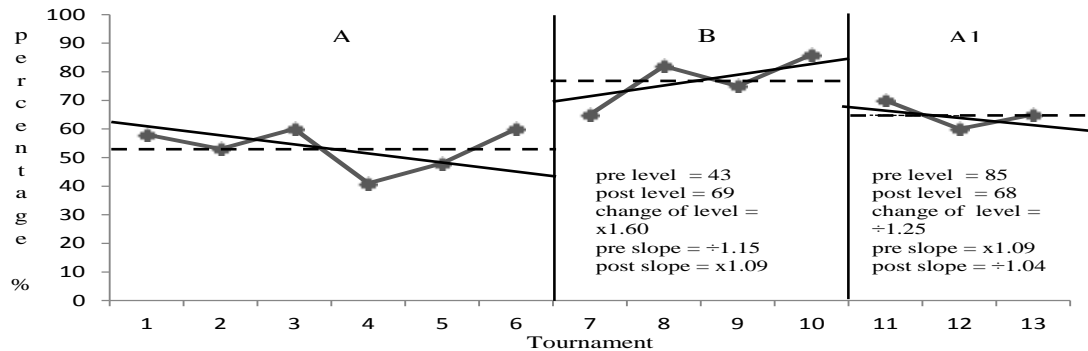
Eizzul's passing achievement was 53.3% in phase A, in phase B increased by 23.7% to 77% and in phase A1 decreased by 12% to 65%. Interventions for 4 tournaments show the mean achievement of passing Eizzul is increased in phase B but decreases again in phase A1. However, the A1 phase mean achievement is better than phase A. The achievement trend has decreased in phase A but increases in phase B and decreases when intervention is stopped (A1). The slope direction is negative at phase A and A1 and positive at phase B. Level achievement is increased between phase A to B but decreases again at phase A1.

Participant 3 (Idham)
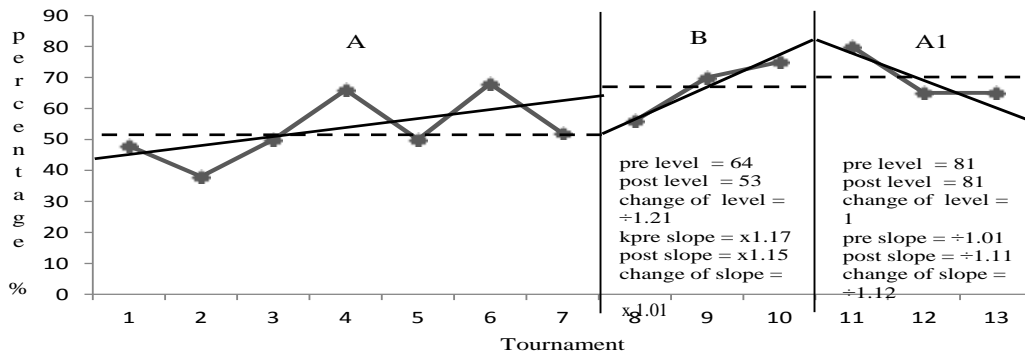
Mean achievement of Idham was 53.1% in phase A. While in phase B, there was an increase of 13.9% to 67%. and in phase A1, it increased by 3% to 70%. Intervention for three tournaments shows the mean achievement of passing Idham increased from phase A to B and phase B to A1. The achievement trend also increased in phase A and phase B but decreased when intervention was stopped at phase A1. The direction of the slope is positive in phase A and B, in phase A1 is negative. Level achievement is increased from phase A to B and the equivalent of B to A1.

Participant 4 (Najmuddin)
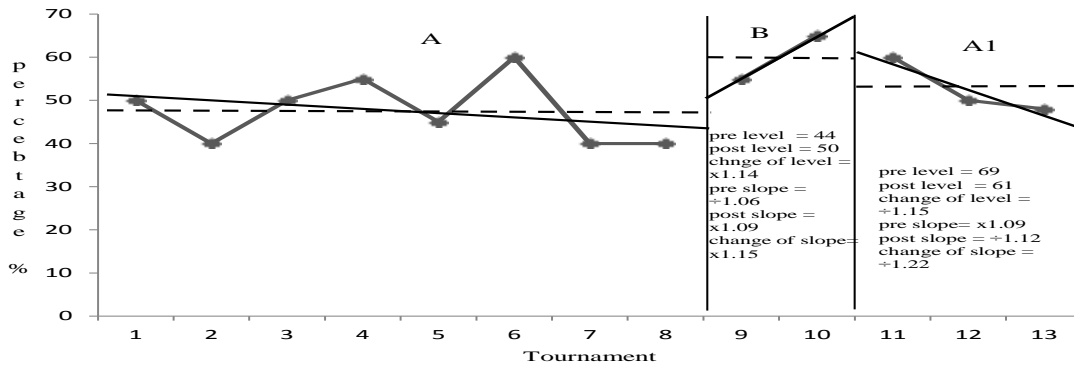
Najmuddin's passing achievement was 47.5% in phase A. 60% at phase B increased 12.5% to 60% and 53% in phase A1 decreased by 7% to 53%. The interventions during the two tournaments showed the mean achievement of passing Najmuddin had increased in phase B then decreased in phase A1. The achievement trend decreased in phase A and increased in phase B but decreased again when intervention was stopped at phase A1. The direction of the slope is positive at phase B but negative at phase A and phase A1. Level achievement has increased from phase A to B but decreases from B to A1.
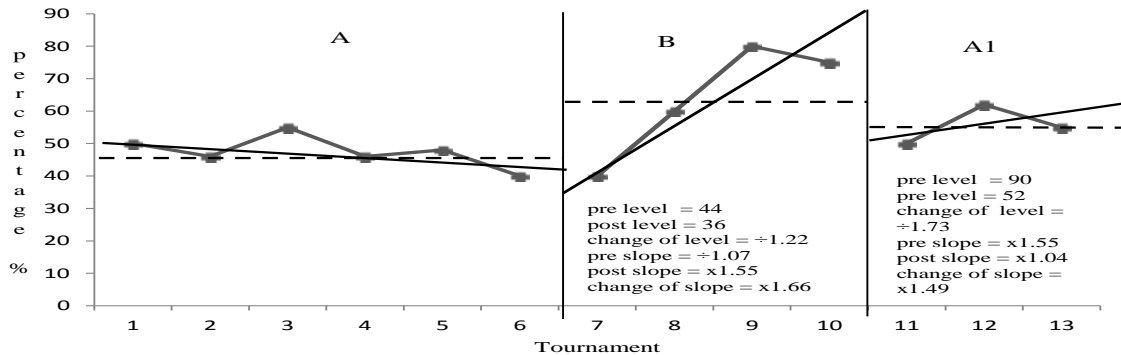
Tackle Skills

Participant 1 (Harris)
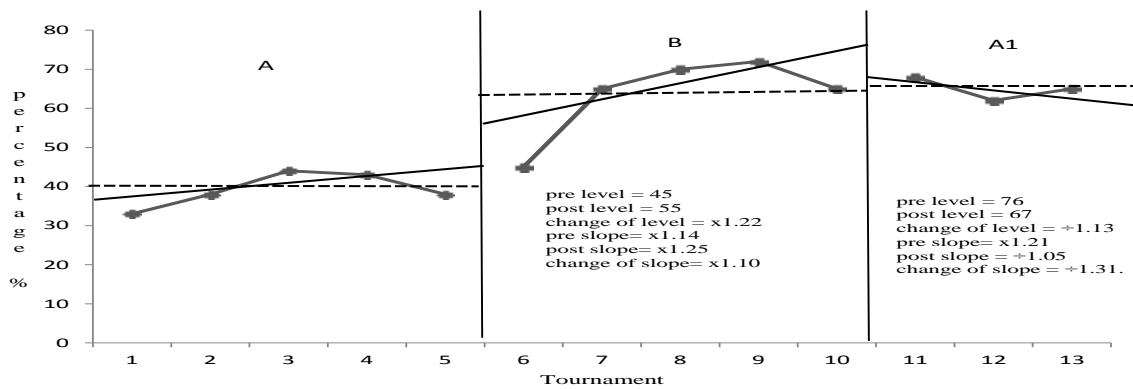
The tackling skill for Harris was 39.2% in phase A. While in phase B, mean increased by 24.2%. to 63.4%. In A1 phase mean increased to 65%. Intervention for five tournaments shows Harris' tackling achievement mean increases in phase B and A1. The achievement trend also increased in phase A and phase B but decreased when intervention was stopped at phase A1., Although the trend of achievement decreases in phase A1, the mean value is still increases compared with

phase A and B. The slope in phase A and B are positive while A1 phase is negative. Level increase occurs between phase A to B but decreases at phase A1.

Participant 2 (Eizzul)

Eizzul's tackling skills achievement was 47.5% at phase A. At phase B, increased 16.5% to 64% while at phase A1 decreased by 8% to 56%. Interventions during the 4 tournaments showed that the Eizzul's tackle achievement mean was increased in phase B but decreased slightly in the A1 phase. However the A1 phase mean achievement is better than phase A. The achievement trend has decreased in phase A but increased in phase B and A1. The direction of the slope is negative in phase A, in phase B and A1 is positive. Level achievement is positive at phase A to B and negative at phase A1.

Participant 3 (Idham)
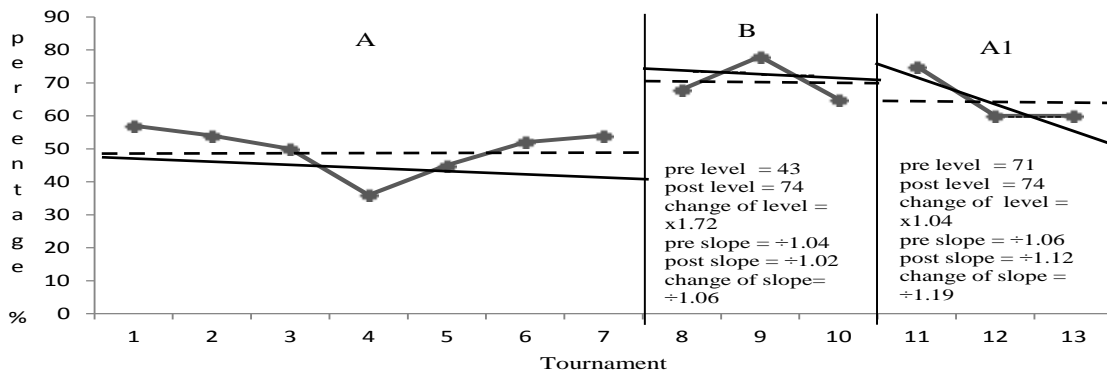
Mean achievement of Idham's tackling skill is 50% at phase A. At phase B increases 20% to 70% while in phase A1 decreases by 5% to 65%. interventions during the three tournaments show that Idham's tackling attainment mean increases in phase B and decrease again in phase A1. The trend of achievement and direction of the slope is decreasing in all three phases. The level change from phase A to B is increasing and increasing again in phase A1.

Participant 4 (Najmuddin)
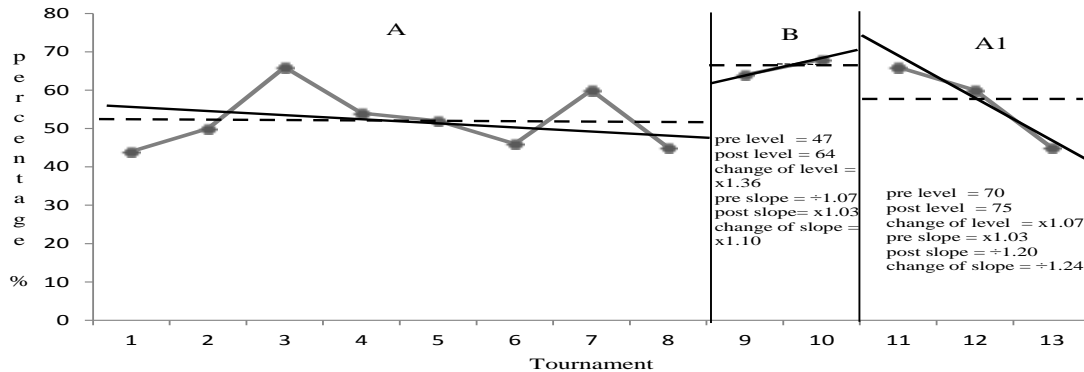
The achievement of Najmuddin's tackling skills was 52% at phase A. At phase B increased 14% to 66% and in phase A1 decreased by 9% to 55%. The interventions during the two tournaments showed that Najmuddin's tackling achievement mean increased at phase B and decreased back in phase A1. The A1 phase mean achievement approached mean at phase A. The achievement trend decreased at phase A, increased at phase B but decreased again at phase A1. The direction of the slope is negative at phase A and A1 but positive at phase B. The level change from phase A to B and B to A1 is increased.

Social Validation

The social validation used in this study is to evaluate the effectiveness of imagery and modeling programs through the experiences experienced by the participants. Reviews are made by participants by answering open questions provided at the end of the program. Martin, Thompson and Regehr, (2004), argue that at least three questions should be given to participants to be answered when the intervention program is completed. A questionnaire for social validity that contains these 5 questions is given to participants when they have successfully completed the entire study.

Overall, the average participant involved in this psychological exercise provide excellent feedback. It not only enhances their performance but it also gives them the chance to try something new. This program not only gives clarity how to do the right action for any skill but also to ask the athlete to think about the correct treatment technique. Different intervening intervals may provide a slight change of achievement between them. What is more important is how their ability to maintain performance when intervention is stopped. They also agreed that the program would expand its use not only to group members but to athletes in different sports.

DISCUSSION

Baseline Phase (A)

The findings in the baseline phase (A) indicate that the four participants had reached a stable level. This suggests that physical exercises carried out only have the ability to improve skills at even level. According to Morgan and Morgan (2009) phase A is to assess the achievement of the participants to assess the impact of interventions to be performed. Routine exercises performed by athletes cannot have significant implications for their performance.

Intervention Phase (B)

In the intervention phase (B) the participants were given an audio imagery training and an action model of expertise in passing and tackling skills. The findings in this phase show that interventions over five tournaments have succeeded in raising the mean achievement of passing skill and tackling skills with rising trends. For the second participant, Eizzul, the four-week B-phase also showed an increase in the mean achievement passing and tackling skills. The achievement trend for Eizzul has showed increment. This finding has an equation as what Post et al, (2012) reviews; and Holmes and Calmels, (2011). The researcher found that the longer the duration of the imagery training and the modeling of the participants the effect would be more effective. Researchers are of the view that the duration of the intervention during the four and five tournaments provides more time for participants to improve their weaknesses. Slow motion videos used can help participants in skill training effectively. This is parallel to what Hegazy, Sherif, and Houta, (2015) and Amara, Mkaouer, Nassib, Chaaben, Hachana, and Salah (2015) who argue that slow-moving techniques are capable of improving athletes' performance. This statement is also supported by Palao, Hastie, Cruz, and Ortega, (2013) which explains that slow motion techniques are suitable for learning or refining new skills or reinforcing understanding of the skills learned. Hence, this finding denies statements made by Guillot and Collet (2005) which explain that slow-moving motion images can cause unsuitable neurons which differ from what is constructed during physical treatment.

In phase B, an analysis of the findings of Idham with intervening three weeks shows that the mean achievement for passing and tackling skills is increased from phase A. The trend for passing skills increases but the trend for tackling skills is decreasing. Compared to Najimuddin's achievement of two weeks' intervention, the mean of passing and tackling skills increase as well as the trend of passing and tackling achievements. The findings from Palao et al. (2013) shows that observations made on the specialist can effectively improve the skill of a person. This statement is supported by SooHoo et al. (2004) who conducted a study on weight gainers found that the expert modeling method has succeeded in raising the mean performance of the participants. The researcher is concerned about the aspiration to advance. Najmuddin intervention was only for two weeks. If this intervention is accompanied by a high desire to go

forward, the result is very pleasing. Participants also explain audio imagery exercises to impact their performance. This has a clear relationship with Lang theory (1979, 1977). Lang also explains that the imagery is a set of suggestions or things that work in an organized way that is stored in long-term memory. Modification of proposals or suggestions will lead to behavior change.

Withdraw Phase (A1)

All participants will go through the A1 phase during the last three tournaments. All participants have shown an increase in achievement when intervention was introduced (phase B). When the intervention was halted at phase A1, the performance trend of most participants began to decline in slow pace except Najmuddin showed a significant decrease. Overall, achievement in phase A1 is better than phase A. This situation explains that interventions introduced can benefit the sustainability of participants performance. The statements made by participants through social affiliations find that they agree with the interventions that have been carried out have improved their performance. But Najmuddin stated that he needed a longer period of time to perform the mental intervention. Participants also explained that they feel more confident about the skills they tested during the competition. This decision supports the statement made by Boyer, Miltenberger, Batsche, and Fogel, (2009) and Cumming et al. (2006) describing the imagery of audio and video modeling that provides timely information can sustain skills in sports.

Performance

Four participants (Harris, Eizzul, Idham and Najmuddin) involved in this study demonstrate that imagery audio training and video modeling are an effective way to improve the skills of passing and tackling during the actual tournaments. Performance improvements can be seen in both the skills tested when they apply imagery audio training and modeling videos. When the intervention is stopped at phase A1 the participants' performance is still good compared to phase A. This statement is supported by Ramsey, Cumming, and Edwards (2008) which explains that athletes' performance increase significantly when imagery exercises are carried out compared to those who only undergo physical training. In addition, this decision is in line with the social validation provided by the four participants. The expert assessment of the video of the championship also showed improved performance on the skills studied.

Participants also explained that by using imagery audio and video modeling interventions, they gained a unique experience that was able to improve performance. They can listen and see the proper treatment in terms of technique, accuracy of behavior and psychological aspects during the tournament. This statement is in line with the study conducted by Post et al. (2012) reported that imagery and modeling exercises are capable of enhancing the performance of athletes either during training or real competition as it is fun and helps athletes to be more focused and calm.

The performance shown by Najmuddin shows that imagery audio interventions and video modeling during two tournaments can still improve performance in both skills (phase B). At phase A1, what can be seen is a sharp drop in performance. This suggests that when interventions are aborted their performance decreases. This finding is consistent with what Weinberg (2008) explained that imagery and modeling exercises should be carried out continuously and consistently to obtain positive results. Post et al. (2012) also recommends that psychological skills training be carried out just as physical training to maintain current performance. The findings shown by Harris in both skills, indicate the increasing trend line for passing and tackling. This showed that the longer the athlete gets imagery and modeling interventions, the performance of the participant is still good although the intervention is stopped.

Overall, imagery audio and video modeling exercises can improve the performance of passing and tackling skills in rugby sports. The answer to the social validation questions found that all participants reported that their performance improved after doing imagery training and modeling. In the future imagery audio and video modeling exercises should also be explored to evaluate the effects on psychological factors such as motivation, self-efficacy, focus and anxiety.

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