Risk Awareness During Horse Riding

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Abstract: Equine industry is getting growth in Malaysia and horse-riding activity is one of the important components, which contributes to the growth process of this industry. Eventually, human tend to take for granted the important of equine safety at point of sale for financial benefits without considering safety aspect during riding especially for the beginner rider. Horse riding is a sport that involves animal which are strong willed and occasionally unpredictable, the risk and dangers associated with both competition and recreational riding tend to be difficult to control and therefore hard to minimize. Poor riding etiquette and the public's poor understanding on horseback riding required broader education campaign aimed at both equestrians and public that can help to increase the safety awareness during horse-riding activity. This study is focus on risk identification of the body position/posture during riding. The aim of this study was to determine the safety/risk awareness during horse riding among beginner rider and to identify the body position/posture during riding that have minimal level of risk. A number of 10 students (8 male, 2 female), have been selected purposely that meet the criteria as the sample. Their body position during riding recorded and observed using Rapid Attire Body Assessment (REBA) worksheet and riding position checklist, in order to identify the level of risk and minimal risk position. All the data then analyzed using Microsoft Excel and IBM SPSS Statistic 25. The finding of this study shows that the students have medium level of safety/risk awareness, which required further investigation and. Hence, the result also proved changes in their riding position/posture after implement the minimal risk posture.

Keywords: awareness, risk, injury, posture, riding, horse-related, REBA

1. Introduction

Horseback riding is acknowledged as one have the rewarding and thrilling sport and recreational activity. However, it is not come without any risk. Horse-related injury defined as the injuries that happen because of the horses or horse-related sports (Zidan and Rao, 2002). A high percentage of riders will experience some sort of injury, with different causes and severity, throughout their riding career. Gombeski et al (2017) reported that, from 679 equestrians, 81% had experience at least one horse-related injury in their last time and 21% had a severe injury requiring hospitalization, surgery, and rehabilitation. Base on individuals visiting US emergency departments, injuries caused by horse has a highest likelihood of requiring hospitalization (Camargo et al, 2018). Horse riding has a highest mortality from other sports with injuries rate less than one per 1000 riding hour and the death rate was one per million populations per annum in SA and 0.5 per million populations per annum in Sweden (Zidan and Rao, 2002). Around 20% to 30% of adult equestrians and up to 50% of children with the range of age 3 – 18 years reported to the Emergency Department and required hospitalization because of the horse riding injury and one in 10,000 riders dies in a given year (Carmichael, 2014). The previous study also stated that anywhere of injured riders believed their injury could be prevented and that the injuries were caused by the horse rider/handler error (Ball et al, 2018). Several studies have also shown that improvement on personal protective equipment associated with education and knowledge on horse behavior and also awareness of potential dangers and serious injuries during riding, could reduce the severity of injury and hospital admissions due to horse riding activity (Camargo et al, 2018).

In Malaysia, equine industry is getting growth and horse-riding activity is one of the important contributing factors to the growth process of this industry. Eventually, human tend to focus on financial benefits take for granted the important equine safety and safety aspect (Chapman and Thompson, 2016). Besides, poor riding etiquette and the public's poor understanding on horse behavior, which had lower level of preventability, required broader education campaign and exposure aimed at both equestrians and public (Gombeski et al, 2017). Lastly, horse riding is a sport that involves animal which are strong willed and occasionally unpredictable, the risk and danger associated with both competition and recreational riding tend to be difficult to control and therefore hard to minimize (Sherry, 1991).

In conclusion, the finding of this study can help to increase the safety/risk awareness in term of riding position/posture during riding and implement the position/posture with minimal risk level.

2. Materials and Method

2.1 Population and Sampling

This study is use an experimental design, which is a quantitative method. Purposive sampling technique is use for sampling procedure where the respondent will be choose purposely from the targeted population based on their characteristics and objective of the research. The samples was selected based on this two criteria where they must undergo one formal riding session class at Equine Park and must be able to perform riding in walk, trot and canter in order to classified them as a beginner rider. This study is focus on Bsc. Equine Management students in Universiti Teknologi Malaysia (UTM) and narrow the scope of study to the fourth year because out of all Equine Management students, only fourth year student had undergo eight formal class session during previous year as the requirement for industrial training. The total population for Bsc. Equine Management fourth year students is 25 students. However, only 10 samples have been select that meet the criteria to participate in this study. The samples consists of 8 males and 2 females. The samples is choose base on Krejcie and Morgan (1970) because it is a common employed method (Chuan, 2006) used to estimate the sample size.

2.1 Research Instruments

Research instruments are the instruments and tools used by the researcher in order to conduct the study especially during data collection process. For this study, the instruments used are:

Camera

DSLR Nikon camera used to record and pictures the rider position/posture during riding for each of the rider. Than the video and picture from the camera are uses to observe the rider's position/posture during riding. It is difficult for researcher to observe directly and filled up the assessment worksheet in the same time because there is high probability to miss any movement or changes of the posture. It can cause in accurate in data collection.

Rapid Entire Body Assessment (REBA) worksheet

REBA is a rapid entire body assessment tool, which evaluates the whole body postural musculoskeletal disorder (MSD) and the risk associate with the job tasks or activity. A single page worksheet is use to evaluate required or selected body posture, forceful exertions, type of movement or action, repetition, and coupling. The REBA was design for easy use without need for advanced degree in ergonomic or expensive equipment as well as reduce in time consume. Using the REBA score (figure 1), the researcher will assign a score for each of the following body regions, which is wrists, forearms, elbows, shoulders, neck, trunk, back, legs and knees.

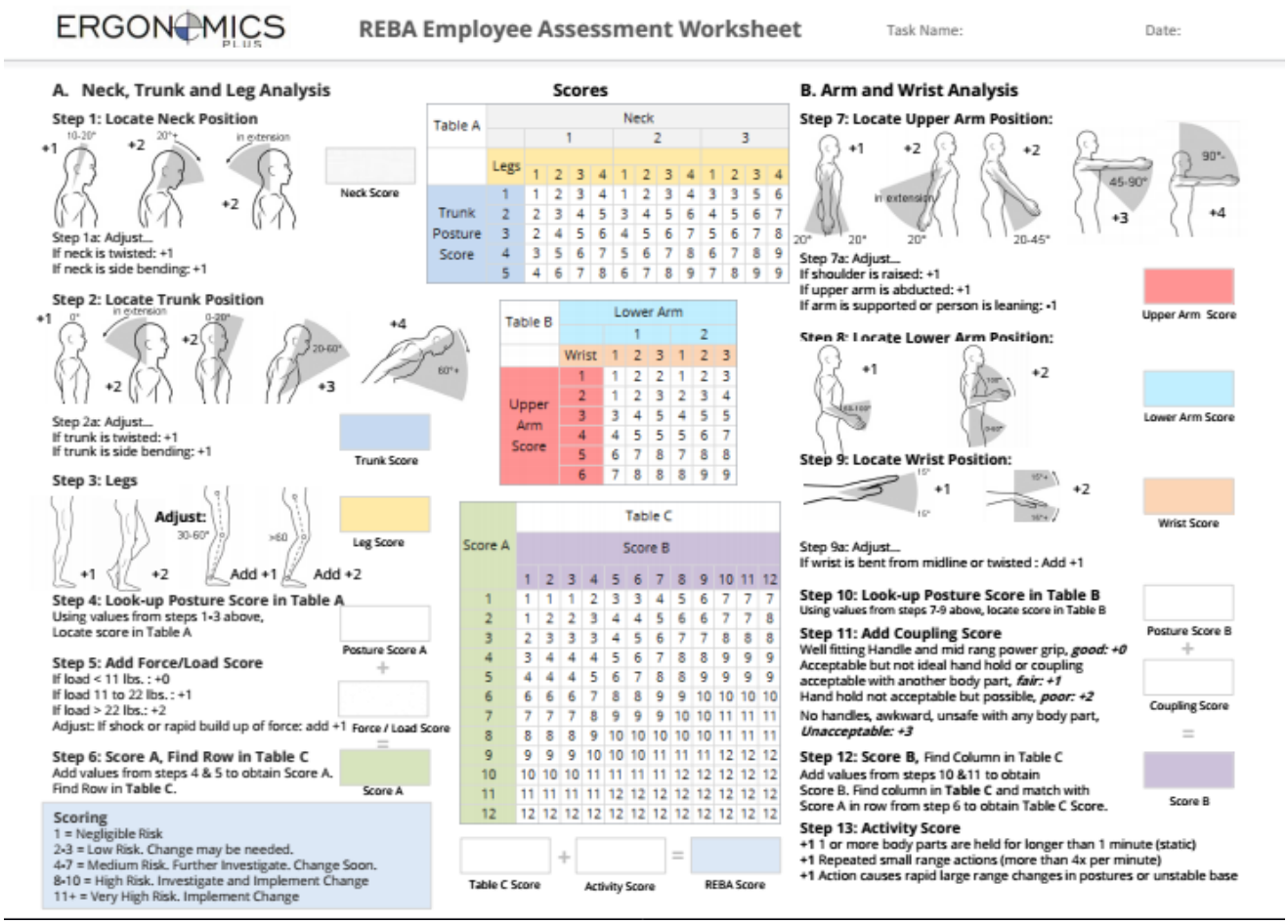

Figure 1: REBA score

After the data for each region collected and scored, tables 1 on the form are then use to compile the risk factor variables, generating the single score that represents the level of MSD risk.

Score	Level of MSD Risk
1	negligible risk, no action required
2-3	low risk, change may be needed
4-7	medium risk, further investigation, change soon
8-10	high risk, investigate and implement change
11+	very high risk, implement change

Table 1: Level of MSD Risk

Riding Position Checklist (RPC)

Riding Position Checklist (RPC) is a checklist derived from the Rapid Entire Assessment (REBA) worksheet and Whole Body Symptom survey. RPC is a tool, which use to identify the change of the position/posture during riding and body discomfort before and after implement the minimal risk posture. RPC consists of two sections, which is A) Body position checklist and B) Body symptom survey.

3. Data Collection Procedure

The data gathered using camera. The participants need to perform riding in Equine Park UTM using suitable horse and their position/posture during riding recorded and pictured. During this process, researcher also completes the Riding Position Checklist. Later, the body position/posture in the video observed in order to fill up the REBA worksheet for each of the participants. The scored from the REBA worksheet than analyzed in order to identify the level of risk that can summarize the level of risk/safety awareness among students during riding. During this stage, all the participants get a brief on minimal risk posture/during riding and required them to practice that position/posture during riding. After a month, all the participants required to riding again and their position recorded again as well as the Riding Position Checklist to see the improvement from minimal risk posture implemented before. Then, the data from the Riding Position Checklist before and after is analyzed to determine the posture that can give minimal risk and changes of discomfort to the rider.

Finally, the collected data imported into a Microsoft Excel and IBM SPSS Statistic, version 25 for statistical analysis. The percentage of the risk level calculated and Wilcoxon Matched-Paired Test used to find the effectiveness of the minimal risk position implemented.

4. Results and Discussion

4.1 Determine the level of safety/risk awareness during horse riding among Bsc. Equine Management fourth year students.

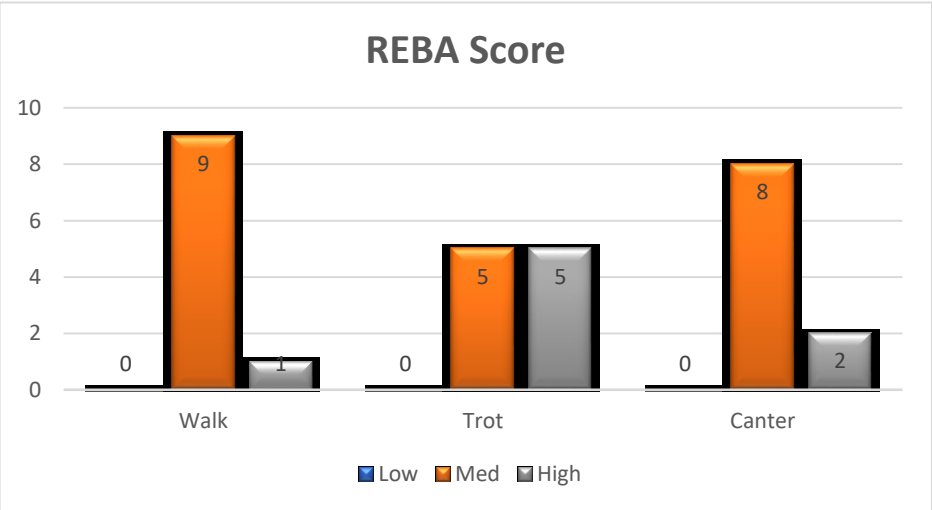

Figure 2: Result for REBA consists of three level of risk, which is low medium and high

Rapid Entire Body Assessment (REBA) consists of three level of risk, which is low medium and high. Histogram chart above shows the Rapid Entire Body Assessment (REBA) for ten participants in walk, trot and canter. Overall, there is no students manage to get low score during all three phase of riding. During walk phase, 9 students get medium scored of risk and only one (1) student get high score. In trot phase, the number of student get medium score and high score risk are equal. While in canter phase, eight (8) students scored medium risk and another two (2) students get high risk. Trot is the phase where student shows the high increase of risk on their body position/posture during riding compared to walk and canter.

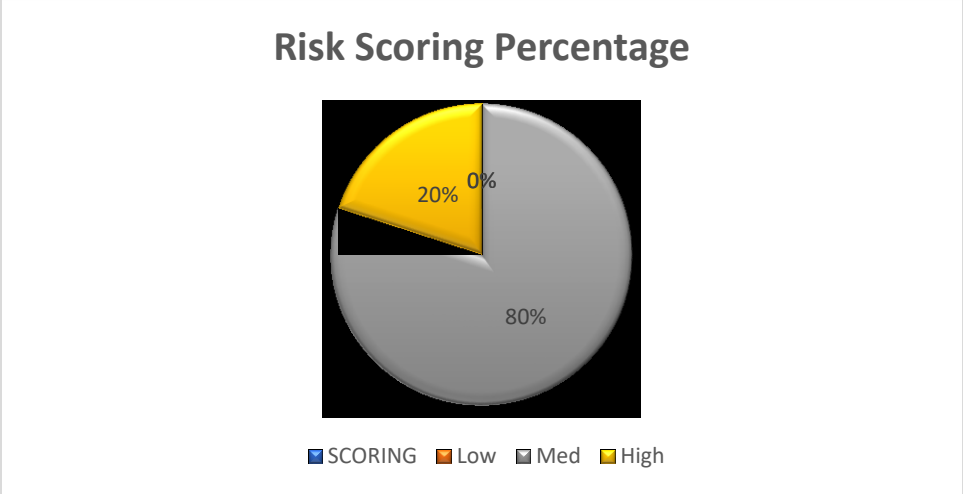

Figure 3: Result for Risk Scoring

The hypothesis for the first objective is the higher the REBA score, the lower the safety/risk awareness among Bsc. Equine Management fourth year students. The overall data have been statistically analyzed and come out with risk score percentage. As shown above, 0% of students manage to get low risk score and 80% of the students scored medium level of risk during horse riding. Eventually, there is 20% from the students get high level of risk resulting from their body position/posture evaluation. However, the pie chart above has summarized that the level of risk/safety awareness during horse riding in fourth students is medium and the hypothesis is unaccepted.

4.2 Identify the body position/posture during riding that has minimal level of risk.

Ranks

		N	Mean Rank	Sum of Ranks
after - before	Negative Ranks	0[a]	.00	.00
	Positive Ranks	8[b]	4.50	36.00
	Ties	2[c]		
	Total	10		

a. after < before

b. after > before

c. after = before

Table 2: Result for body position/posture during riding that has minimal level of risk

Test Statistics[a]

	after - before
Z	-2.549[b]
Asymp. Sig. (2-tailed)	.011

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

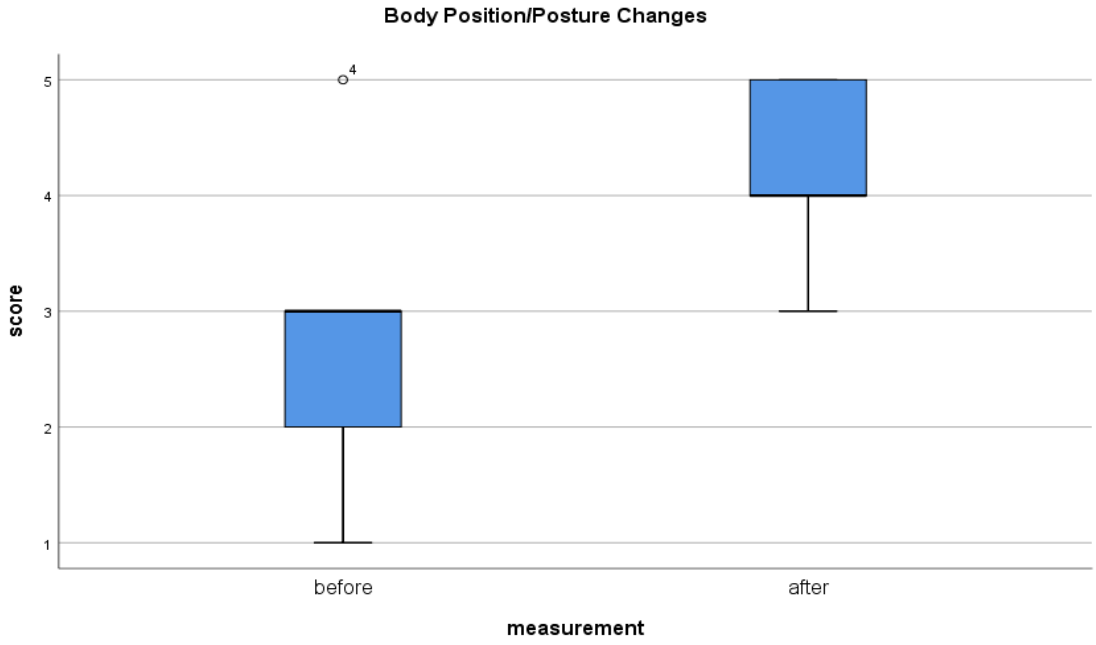

Figure 4: Result for minimal risk posture

From the REBA, researcher comes out with the minimal risk posture. The posture proposed to the participants to practice on the first stage data collection. The body symptoms and changes on body position recorded before and after the implementation of the minimal risk riding position/posture. After one month, the rider being observed again using REBA and RPC to identify any changes and improvement resulting from the minimal risk position/posture practice. Data analysis results using the Wilcoxon T test indicate that there is a difference in body position when riding horses before they are exposed to minimal risk of body position ($T = 36.00$, $p < .05$). This decision is supported by the median value of the Boxplot graph of an ordinal score before and after exposure to a minimal risk of body position, which clearly indicates the median ordinal score of the student body position after (median = 4) exposure is higher than the median ordinal score of the student body position changes before exposure (median = 3). Other than that, body symptoms survey from the participants also shows the decrease in the number of body pain and discomfort. These changes support that the minimal risk posture recommended can help improved the rider comfort ability during riding which can minimize the injury to their body.

5. Conclusion and Recommendations

The horse riding community has long recognized that risk and injuries are one of the potential consequences of participating in equestrian sport or recreational activity especially horseback riding. This study indicates that poor body position/posture during horse riding also can increase the risk of injury to the part of the body especially for the beginner rider. For example, level of risk could increase from walk phase to the trot phase due to the unnecessary body posture. Rapid Entire Body Assessment (REBA) has shown a good impact on risk identification during riding. It is important for the riders to aware about the risk and injuries that might happen to their body because of poor position/posture practice during horse riding. Riders need to be educating with the minimal risk body position/posture as part of the safety practice especially for beginner riders and instructors. For the further research, the risk identification among amateur and professional rider can be conduct to see the differences of risk level among different level of riding skill.

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