**ABSTRACT**

**Background:** Rhythmic Gymnastics is a sporting discipline involving the use of an apparatus (hoop, ball, clubs, ribbon or rope) to a choreographed routine with music. It requires agility, grace, co-ordination and most of all flexibility. Safety in Rhythmic Gymnastics is questionable when one takes training hours and the extreme flexibility required into consideration. An awareness and understanding of the prevalence and risk factors in Rhythmic Gymnastics will allow event organisers, medical personnel, managers, and coaches to adapt training approaches that will minimize the development of injuries. This information will also aid in developing monitoring systems to prevent adaptation injuries, which will lead to safer training and better management of gymnasts

**Objectives:** This study aimed to investigate the prevalence of musculoskeletal injuries in rhythmic gymnasts within the eThekwini municipality and to identify selected factors associated with an increased risk of injury, in order to improve the management of gymnasts.

**Methods:** A quantitative, descriptive questionnaire-based survey with a Beighton Score assessment was conducted on 67 Rhythmic gymnasts in the eThekwini municipality. Statistical analysis was performed on the results obtained from the questionnaire and the Beighton Score using IBM SSS version 23.0. The Chi-squared test was used (Fisher’s Exact Test was used when the Chi-squared test was violated); A *p* value of less than 0.05 was considered as statistically significant. Graphical representation of scores by groups was done using various types of tables and graphs. Risk factors for injuries were assessed using logistic regression. Factors were entered individually into the model to determine the co- efficients and odds ratios. Trend tests were computed in order to better assess associations between specific factors and injury.

**Results:** A 100% response rate was achieved in this study. The average age of the participants was 12.3 years (95% CI= 11.7-12.8), average height was 148.5 centimetres

(95% CI= 145.1-151.9), average weight was 41.0 kilograms (95% CI= 38.3-43.7), the average level of performance was 4.9 (95% CI= 4.1-5.8) and the average Beighton Score

was 5.8 (95% CI= 5.3-6.3). The most commonly previously injured areas were the ankle (n=25) (14.0%), hip and knee (each n=19) (each 10.6%) and the low back (n=18) (10.1%). When considering the two most severe previous injuries the results stay similar, with the ankle being most commonly injured (n=15) (28.0%), followed by the hip (n=9) (17.0%) and the knee (n=6) (11.0%). When considering current injuries, the most commonly injured area is the knee and low back (each n=11) (each 14.5%), and the hip and ankle (each n=9) (each 11.8%). From the above it can be deduced that RG results in more injuries to the lower limb than the upper limb, or core/abdomen or the spine. The most common types of RG injury were muscle strains (n=16) (23.9%), followed by unsure (n=9) (13.4%) and joint sprains (n=8) (11.9%). The most common cause of injury for both previous and current RG injuries were overstretching and overuse ((n=23) (34.3%) for previous injuries; (n=15) (22.4%) for current injuries). Risk factors for injury were significant for the following: training hours per week (36.5 times for 5-8 hours of training per week; 15.7 times for under five hours of training per week; both when compared to more than 8 hours) and lack of balance skills included in RG training (4.5 times more likely than not). When considering treatment option used to keep the body in a good condition, a participant was 4.3 times more likely to utilize home remedies than any other treatment option. Trend tests noted that there is an increase in the mean of injuries as one goes up in age, up until a certain age (13-14 years of age for current injuries; 15-16 years of age for previous injuries), thereafter, there is a decease. Trend tests were also constructed for training hours per week; there was a directly proportional relationship between training hours per week and injury.

**Conclusion:** When considering risk of injury in RG, many of the risk factors cannot be modified (such as age). Those risk factors that can be modified (such as training amount and components of training) should be considered by gymnasts and their coaches in order to implement strategies that could prevent injury.

**Keywords:** Rhythmic gymnastics, musculoskeletal injury, prevalence, ligament laxity, risk factors