

The Effect of First Aid Coaching on First Aid Skills For Dislocations Among High School Students Participating in Sports

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Abstract

Background of study: Sports injuries, particularly dislocations, are common among sports school students and may lead to serious complications if not treated promptly. However, students first aid knowledge and skills remain limited. This study aimed to determine the effect of First Aid Coaching on first aid skills for dislocations among students at a Sports Talent High School in Bengkulu City.

Methods: This study used a quasi-experimental design with a pretest– post-test control group approach. A total of 70 students (n=70) were selected using purposive sampling and divided into an intervention group (n=35) receiving First Aid Coaching and a control group (n=35) receiving leaflets. Data were collected using a knowledge questionnaire and a skills observation sheet and analyzed using the Wilcoxon test and the Independent Samples t-test.

Result: The results showed a significant difference in first aid skills between the two groups ($p < 0.05$). The mean posttest skill score in the intervention group was higher ($M = 54.88$) compared to the control group ($M = 43.06$), indicating a greater improvement following First Aid Coaching.

Conclusion: In conclusion, First Aid Coaching is more effective than printed media in improving students' first aid skills for dislocations. This method is recommended as an educational strategy to enhance students' preparedness in managing sports injuries.

A. Introduction

Sports are an important part of society because they play a role in improving physical fitness. All sports carry the risk of injury, ranging from minor to severe, so the risk of injury during sports activities cannot be completely avoided (Nurrokhmah & Anggita, 2024; Lankhorst et al., 2019).

Sports injuries can occur during training, competitions, or after competitions, and often include sprains, muscle strains, knee injuries, dislocations, bruises, and broken bones (Qonita Nabila dkk, 2023). A dislocation is a condition in which a bone moves out of its normal position in a joint (Wang et al., 2024). This may involve the partial displacement of bone components or the complete separation of bone components from their normal position, namely, the joint socket (Panacea, 2019).

Epidemiologically, the prevalence of sports injuries is quite high. Data from the 2018 Basic Health Research (Riskesdas) reported that the national prevalence of injuries reached 9.2%. Of this total, 30.5% were sprains and dislocations, 67.36% were abrasions/bruises, and 5.83% were fractures. The most common location of injuries was the lower body (64.5%) and upper body (33.69%). In addition, 6.4% of injury cases occurred at school or in the vicinity (Kemenkes RI, 2018). These figures underscore the

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public health significance of sports-related injuries in Indonesia. School athletes are a group that is highly vulnerable to injury. This is due to the high intensity of training, imperfect sporting techniques, ongoing physical growth, and the demands of intense competition. Research by Rahmaniar, et al (2019) reports that the most common injuries experienced by young athletes include bruises, sprains, fractures, and dislocations. These data reinforce the need for preventive interventions and first aid skills.

First aid is a crucial step in preventing injuries from worsening before victims receive further medical treatment (Yari et al., 2025). However, students' knowledge and skills in providing first aid are still limited. A lack of understanding of the correct procedures can lead to mistakes in treatment and worsen the victim's condition (Wijaya & Widyawati, 2022). A preliminary survey at Bengkulu Sports Talent High School showed that 14 out of 15 students had experienced sports injuries, with the most common types being muscle cramps, sprains, and dislocations (Prieto-González et al., 2021). However, to date, there has been no formal health education program on first aid, and there is not even a Red Cross Youth (PMR) organization at the school (Joys et al., 2022; Warutere et al., 2014).

Previous studies have confirmed that health education can improve first aid skills. Shows that animated video-based educational interventions improve psychomotor skills in first aid among sports communities. Maghfiroh et al. (2023) Research also reported that first aid training using the RICE method had an effect on increasing the knowledge of cycling community participants. These results show that the coaching method is an educational approach that emphasizes direct assistance, practice reinforcement, and skill evaluation (Burtson et al., 2025). Compared to conventional methods such as lectures or leaflets, coaching is considered more effective in instilling skills because participants not only receive information but also practice it directly (Fajar et al., 2024; Reid et al., 2019; Wood et al., 2022).

However, most previous studies primarily focused on improving knowledge rather than practical first aid skills, and limited research has specifically examined coaching-based interventions for dislocation management among high school athletes. In addition, there is a lack of structured and context-specific first aid training programs implemented in sports-based schools, particularly in Bengkulu City. Thus, this method is highly relevant for improving the preparedness of sports school students in dealing with injuries.

Based on this background, this study was conducted to analyze the effect of First Aid Coaching on first aid skills for dislocations among students at the Keberbakatan Olahraga High School in Bengkulu City. The results of this study are expected to form the basis for the development of health education strategies in sports schools, while also improving student safety and independence in dealing with the risk of injury.

B. Methods

This study employed a quasi-experimental design using a pre-test and post-test control group approach. The study population consisted of all students at the Sports Talent High School in Bengkulu City. A total of 70 students ($n=70$) were selected using purposive sampling and divided into two groups: 35 students in the intervention group, who received First Aid Coaching, and 35 students in the control group, who received educational leaflets on first aid for dislocations. This study has obtained ethical approval from the Health Research Ethics Committee (No.KEPK.BKL.289/04/2025). Prior to data collection, all participants' provided informed consent, and confidentiality of respondents' data was strictly maintained. The research instruments included a structured multiple-choice questionnaire to assess knowledge and an observation checklist to evaluate first aid skills for dislocations based on the Standard Operating Procedure (SOP) of the RICE method. The questionnaire had been tested for validity and reliability, with all items declared valid and a Cronbach's alpha coefficient > 0.70 , indicating good reliability. The observation sheet consisted of several skill indicators with a standardized scoring system to ensure objective assessment. The second session involved hands-on practice and direct coaching, followed by a post-test assessment. Data were analyzed using univariate and bivariate methods. Univariate analysis was used to describe respondents' characteristics, while bivariate analysis was used to examine differences in skills. The Wilcoxon test was applied to assess within-group differences (pre-test and post-test), and the Independent Samples t-test was used to compare post-test results between the intervention and control groups. A significance level of $p < 0.05$ was used in all statistical analyses.



Figure 1. Implementation of first aid coaching

C. Results and Discussion

Table 1. The difference in the average knowledge and skill scores before and after the intervention in the intervention and control groups

	N	Mean (Min-Max)	Z	P-Value
Intervention				
Knowledge (before)	35	39.597 (23-61,5)	-5.208	0.000**
Knowledge (after)	35	94.280 (76.9-100)		
Control				
Knowledge (before)	35	43.240 (23-61,5)	-5.190	0.000**
Knowledge (after)	35	85.700 (69.2-100)		
Intervention				
Skills (before)	35	37.883 (31.8-45.4)	-5.183	0.000***
Skills (after)	35	92.963 (81.8-100)		
Control				
Skills (before)	35	38.400 (31.8-45.4)	-5.203	0.000***
Skills (after)	35	82.954 (72.7-100)		

Based on Table 1, the difference in mean knowledge scores in the intervention group before first aid coaching was 39.597, and in the control group was 43.240. After the intervention, there was an increase in knowledge in the intervention group with a mean of 94.280 and in the control group with a mean of 85.700. The skill scores in the intervention group before first aid coaching were 37.883 and in the control group 38.400. After the intervention, there was an increase in skills in the intervention group with a mean of 92.963 and in the control group with a mean of 82.954. The results showed a significant difference between the mean scores before and after the intervention in the intervention group and the control group.

Table 2. The Effect of First Aid Coaching on the First Aid Skills of High School Students with Sports Talents in Bengkulu City

	N	Mean \pm SD	Mean difference (IC 95%)	t	p-Value
Skills score					
Intervention	35	54.881 \pm 4.2543	11.3743 (8.6383- 14.1203)	8.296	0.000
Control	35	43.507 \pm 6.9063			

Table 2 shows the results of statistical tests using the Independent-samples t-test, which yielded a p-value of $0.000 \leq \alpha 0.05$. This indicates a significant difference in the average skill scores between the

intervention group and the control group. The mean skill score in the intervention group was 54.881, while that in the control group was 43.057. Thus, it can be concluded that H_a is accepted, indicating that first aid coaching has an effect on the first aid skills of high school students with athletic talents in Bengkulu City.

The results of the Independent Samples t-test showed a statistically significant difference between the intervention and control groups ($p < 0.05$), with a higher mean skill score in the intervention group ($M = 54.88$) compared to the control group ($M = 43.06$). This indicates that First Aid Coaching is more effective than leaflet-based education in improving students' first aid skills for dislocations. This is in line with the results of research by Ramadhan & Kanita (2022) with a p-value of $0.000 < \alpha 0.05$, which shows that the demonstration method is more effective than using the leaflet method for teaching first aid skills for sprains to soccer players in Sukoharjo. Providing first aid training has a significant positive impact, including improving competence, expanding knowledge, and fostering students' awareness in providing first aid when injuries occur. In addition, the experience and knowledge gained through this training play an important role in influencing effective decision-making in the future (Fahrudin et al, 2023).

These research findings are in line with Doni et al, (2024) which showed the effectiveness of training in RICE management skills for ankle sprains in sports injuries among members of the PMR SMKN 1 Martatapura. Maghfiroh et al, (2023) also reported that training using the RICE method improved the knowledge and skills of the sports community. Similarly, Fajar et al. (2024) emphasized the effectiveness of the coaching method in improving health practice skills because it involves direct guidance, evaluation, and feedback. The similarity of these results reinforces that practice-based learning is far more effective than print media or lecture-based education (Jeyakumar et al., 2021; Yan et al., 2024).

Although the control group only received leaflets, the small improvement that occurred shows that print media still has a role in increasing basic knowledge. This is in line with Yuliasih, et al (2025) who stated that leaflets can be a source of independent learning because they are flexible, easy to reread, and accessible at any time. However, their limitation lies in the skill aspect, as leaflets do not provide interaction or opportunities for direct practice. Therefore, leaflets can serve as a supplement, but not as the main method in first aid skill development.

However, this study has limitations in that the evaluation was only conducted in the short term, so it is not yet known whether the improvement in skills will last in the long term. This is in line with the findings which shows that although first aid knowledge tends to last, practical skills such as handling choking victims or dislocations decline significantly within 30–90 days after training. This confirms that motor and procedural skills require regular refresher training. In the context of dislocation management, periodic first aid coaching is essential as a refresher method to maintain readiness and accuracy of actions, as recommended through retraining every 90 days.

To overcome these limitations, further research needs to be conducted with a broader scope, using long-term repeated evaluation methods. In addition, the integration of First Aid Coaching with digital media, such as applications or interactive modules, can be explored to strengthen skill retention and expand the reach of education. Thus, a more comprehensive health education strategy can be developed to improve students' preparedness for sports injuries.

Practically, these findings imply that sports schools should integrate First Aid Coaching into their regular training programs, not only as a one-time intervention but as a continuous and structured activity. Periodic refresher training (e.g., every 2–3 months) is recommended to maintain students' skill retention and readiness in handling injuries. In addition, combining coaching methods with digital learning media (such as mobile applications or interactive modules) may further enhance accessibility and long-term skill retention. Future studies are recommended to use longitudinal designs to evaluate long-term effectiveness and explore innovative educational approaches to strengthen first aid competencies among students.

D. Conclusion

This study shows that First Aid Coaching is effective in improving first aid skills for dislocations among high school students with athletic talents in Bengkulu City. The improvement in skills in the intervention group was significantly greater than in the control group, which only received leaflets. This confirms that the coaching method, which integrates theory, demonstration, and hands-on practice, is superior to passive education. These findings have important implications for sports schools to integrate First Aid Coaching into the curriculum or extracurricular activities as an effort to improve student preparedness for

injuries. By applying this method, students can be more independent, responsive, and precise in providing first aid, thereby reducing the risk of complications and creating a safer learning environment. However, the limitations of this study in the form of short-term evaluation need to be considered. Therefore, further research is recommended for long-term evaluation and exploration of combining coaching methods with digital media to ensure more sustainable and widespread intervention outcomes.

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F. Author Contribution Statement

NT designed the study, conducted the intervention, collected data, and wrote the manuscript; EB and AW provided guidance on methodology, instrument validation, and data analysis; ST and DW provided critical input and edited the manuscript for publication .

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