

# TURNITIN DEVELOPMENT OF A SPORTS INJURY AID...

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**PENGEMBANGAN BUKU SAKU PERTOLONGAN DAN PERAWATAN CEDERA OLAHRAGA  
BAGI SISWA SEKOLAH MENEGAH ATAS**

**DEVELOPMENT OF A SPORTS INJURY AID AND TREATMENT HANDBOOK FOR HIGH SCHOOL  
STUDENTS**

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**Abstrak**

Tujuan dari penelitian ini adalah untuk membuat buku saku bagi siswa yang berfokus pada Pertolongan dan Perawatan Cedera Olahraga di sekolah. Studi ini adalah penelitian pengembangan berdasarkan desain Borg and Gall yang melibatkan empat validator: dosen pengguna, ahli terapi, ahli massage, dan ahli media. Uji coba skala kecil dengan empat siswa dan skala besar dengan 25 siswa. Data yang dikumpulkan untuk penelitian ini dikumpulkan melalui uji pelaksanaan dan penilaian ahli yang dilakukan melalui lembar kuesioner, serta uji kompetensi yang dilakukan melalui analisis data deskriptif. Peneliti menggunakan 8 dari 10 langkah yaitu identifikasi potensi dan masalah, pengumpulan bahan, desain produk, pembuatan produk, validasi oleh ahli materi dan ahli media, revisi produk, produk akhir, serta uji coba terbatas. Subyek dalam penelitian ini adalah siswa kelas XI SMA Tunas Pelita Kota Binjai. Uji coba kelompok kecil menunjukkan bahwa buku saku ini cukup layak dengan segi materi sebesar 60%, keterbacaan bahasa sebesar 50%, dan penyajian buku sebesar 55%. Uji coba kelompok besar menunjukkan bahwa buku saku ini layak dengan segi materi sebesar 87%, keterbacaan bahasa sebesar 91%, penyajian buku sebesar 90%, dan tampilan buku sebesar 91%. Secara keseluruhan, buku saku ini dianggap layak

**Kata Kunci:** pengembangan, cedera, siswa, sekolah, buku

**Abstract**

This research aims to create a pocketbook for students that focuses on Sports Injury Relief and Treatment in schools. This study is development research based on the Borg and Gall design involving four validators: user lecturers, therapists, massage experts, and media experts. Small scale trial with four students and a large scale with 25 students. The data collected for this research was collected through implementation tests and expert assessments carried out through questionnaires, as well as competency tests carried out through descriptive data analysis. Researchers used 8 out of 10 steps, namely identification of potential and problems, collection of materials, product design, product creation, validation by material experts and media experts, product revision, final product, and limited trials. The subjects in this research were class XI students at Tunas Pelita High School, Binjai City. Small group trials showed that this pocketbook was quite adequate with material at 60%, language readability at 50%, and presentation of the book at 55%. Large group trials showed that this pocketbook was feasible with the material at 87%, language readability at 91%, presentation of the book at 90%, and appearance of the book at 91%. Overall, this paperback is considered decent

**Keywords:** development, injury, student, school, book

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## INTRODUCTION

The definition of sports injury according to is a condition of tissue damage accompanied by impaired function that arises due to direct physical trauma from sports activities, both mild (without requiring medical treatment) and severe Injuries can be in the form of wounds, heat, pain, swelling, or malfunction of other members of the body. In every accident or injury there will be a situation of chaos and panic at the scene, involving victims who experience disorders such as respiratory disorders, bleeding, consciousness, infection, and disability (Widagdo, 2023). A first aid practitioner must be able to overcome these things, so the thing to do is to eliminate chaos and plan the next aid action (Nekada & Wiyani, 2020). Injuries or wounds caused can be in the form of heat, pain, swelling, redness, or malfunction of other members of the body (Manik et al., 2021). In every accident or injury there will be a situation of chaos and panic at the scene, involving victims and helpers (Susanti & Sari, 2017)

Sport is the most frequent cause of injury, according to the possibility of accidents in schools more often experienced during the teaching and learning process of physical education both outdoors and indoors, compared to during the teaching and learning process of other subjects that generally take place indoors (Supriyadi & Supriyono, 2014). Physical education in schools is known as Physical Education Sports and Health (PJOK) and creates interaction between teachers and students in learning motion to achieve common goals (Mustafa & Dwiyo, 2020). PJOK learning is synonymous with physical fitness and is also related to psychological conditions that come from the benefits of the processes carried out by physical education (Usman et al., 2019). Physical education learning has the same importance as other educational programs and has the same learning environment such as affective, cognitive and psychomotor, but physical education learning refers to learning to the psychomotor aspects of children, to improve children's fitness and movement skills (Hendra & Hariyadi, 2020).

Students' physical activity learning must have its own risks, students often make negligence or mistakes when doing physical activities. The risk that occurs from sports activities is the occurrence of injury. The school environment is the second highest location where injuries occur due to the unsafe condition of the school environment and the lack of understanding of students in the school environment regarding the concept of danger and first aid measures when injuries occur (Susanti, & Sari, 2017) Based on the results of previous studies, the self-efficacy of school students as laypersons in first aid for injuries is an important aspect to consider. Several studies have shown that the self-efficacy and knowledge level of school children about first aid is still low (Nastiti et al., 2023), This may be due to their age and lack of previous experience in dealing with injuries (Granello et al., 2022). Efforts are needed to increase the confidence and knowledge of school-aged lay people, which can be initiated by health workers (Mathew et al., 2016). It is also important to teach basic first aid in schools as it prepares students to react to situations and provide immediate management for various incidents (Neha & Rajalakshmi, 2021). Overall, there is a perceived need for first aid knowledge among school students, and first aid education should be mandatory in the school syllabus

General students have experienced injury during physical education and health learning that takes place at school. This disrupts the learning process for both teachers and students. Studies have shown that both boys and girls are at risk injury during these classes. Injuries can range from mild to moderate, with sprains being the most common type of injury. The ankle is the most commonly injured area. Preventive measures to reduce injury rates have not been identified. However, injury prevention programs are essential for the

safety of students and to safeguard their professional careers. Teachers play an important role in providing knowledge about safe behavior and demonstrating correct and safe performance during class. It is important for teachers to adequately discuss sports injuries with students and ensure that sports facilities are safe (Mukherjee, 2014). Another study provided information on injuries in high school physical education classes. It states that suburban high school students suffer 36 injuries per 100 participants per year, with sprains being the most common type of injury. The ankle was the most commonly injured area (Goossens et al., 2014). It is important for teachers to adequately discuss sports injuries with students and ensure that sports facilities are safe. Injuries can occur during sports both during learning, training and competing, heavy daily activities and this incident is difficult to avoid (Siregar et al., 2023). Sports injuries that occur vary greatly in the location of the human body, from the mildest level of pain, complaints of fatigue, and prolonged lethargy and the most severe in the form of loss of motion function due to muscle injury or fracture (Triyani & Ramdani, 2020). If the condition is not treated quickly, it can certainly interfere with life activities and general health. Warming up sufficiently is one of the wisest ways to avoid minor injuries. In addition, recovering the body can prevent injury by increasing the body's metabolism (Siregar & Nugroho, 2022).

This research will discuss more about first aid for injuries that can cause infectious disorders, namely the help and treatment of sports injuries with the specification of wound material (open and closed wounds) (Sutirta et al., 2023). Physical education learning has a relatively greater risk of injury than other subjects. So that in the physical education subject, a content of learning material about health education is developed, in addition, according to their development, students at the secondary education level, both junior and senior high school, are very vulnerable to injury. This argument is corroborated by the research that about one-third of school children are injured during physical education classes, with boys being injured more often than girls. Injuries were most common in grades 6 to 8, with basketball and soccer being the main culprits for boys and volleyball for girls (Strukčinskienė et al., 2015). Injury aid and treatment is very important to learn both for the community, educators and students as one of the first aid, but a lot of community educators and students who face someone getting injured just screaming for help and fear (Pasaribu et al., 2022). There are several ways of handling that are usually done to treat injuries, in the field of physiotherapy itself known as RICE, namely Rest, Ice, Compression, Elevation (Mustafa, 2022). If you see an accident to someone, one of which often occurs when students take part in sports learning or training at school experiencing injuries are only taken to alternative and medical treatment without being given first aid and treatment assistance when an injury or accident occurs (Junaedi & Wibawa, 2021). Therefore, it is necessary to provide a pocket book that can help students in handling injuries.

There are several learning resources that can be used to introduce injury aid and treatment, including: smart cards, audio-visual media, pocket books, and so on (Meikahani, 2015). That coursebooks provide great benefits in teaching and learning activities because in this case coursebooks help students solve problems (Surahman & Yeni, 2019). With pocketbooks that are easy to print and small in size and do not need to take up more space to use them, students can focus more on learning because pocketbooks have descriptions that are not too long and there are colorful pictures that are interesting to learn so that they are easy to carry anywhere and anywhere can be useful for students (Yuliandra & Fahrizqi, 2019). In accordance with the character of high school students, the appropriate one was chosen, namely a pocket book that contains pictures and instructions in the rescue and treatment of injuries. What distinguishes this pocket book from other research results is the delivery of book content on how to handle sports injuries more effectively and efficiently. The contents of the book explain easy procedures for how students during physical education learning

understand and understand if there are other students experiencing injuries during exercise. The novelty of this research is that it shows students to be skilled in handling first aid treatment for sports injuries that refer to pocket books.

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## METHOD

This research is a development research or Research and Development (R&D). According to (Sugiyono, 2013) the development research method is a research method used to produce certain products and test the feasibility of these products. Research and development (R&D) is a process used to develop and validate products. In fact, the purpose of educational research is not to develop products, but rather to discover new knowledge (through basic research) (Gall et al., 2007).

The procedure used in this development research adopts the model according to (Sugiyono, 2013). Researchers used 8 out of 10 steps, First, information gathering and potential problems. In this process the author observed the students' low knowledge of sports injury aid and treatment. Second, the collection of materials. The results of the information show that improper handling of injuries can worsen the condition of the injury itself. Reinforced by the low knowledge of sports students to obtain learning outcomes, this is due to the limited media supporting learning for the help and treatment of sports injuries. Third, initial product design. After obtaining information, the next step is to compile a framework for the product to be developed, namely a pocket book. Fourth, making products, there are several important points in compiling products, namely indicators that must be achieved by students, forms of learning evaluation for each material, basic techniques for preventing and helping and treating sports injuries. Fifth, Expert validation After the product is designed, the next step is to validate it first with experts to get input, the product developed is declared valid. Sixth, product revision, after being validated by material experts and media experts, the product underwent several revisions, specially in the contents of the pocket book. Seventh, Limited trials, the first stage was a small group trial with a total of 4 students, the second stage was a large group trial with a total of 25 students. The trial emphasizes the ease with which students can understand the pocket book developed which consists of indicators of each material, images and pocket book displays. Eighth, making the final product compiles the product. This process is the last stage after going through the revision and trial stages, after which the product is named "Pocket Book of Sports Injury Rescue and Treatment".



**Figure 1.** Product Development Design (Sugiyono, 2013)

The stages of this research without intending to reduce the substance of the model that has been developed by previous experts. These stages are solely to make it easier for users of research methods to understand the R&D procedure. The instrument in this development research is to use a questionnaire (<https://shorturl.at/cgnzG>).

For data collection, this study used content analysis and percentage descriptive quantitative analysis. Qualitative data from content analysis was obtained through expert validation and trial activities, which included input, responses, criticisms, and suggestions. Quantitative data, in the form of assessments, obtained through product trial questionnaires, were analyzed through descriptive quantitative analysis during trial activities. This study used an assessment or response questionnaire with the answers "VERY LACK", "LACK", "ENOUGH", "GOOD", and "VERY GOOD". Based on the number of answers, the researcher then percented each answer using the formula (Sugiyono, 2013)

**Table 1.** Percentage-based Assessment Conversion

No	Percentage	Result	Category
1	81-100%	A	Very Good
2	61-80%	B	Good
3	41-60%	C	Good Enough
4	21-40%	D	Less
5	0-20%	E	Very Poor

## RESULT

This sport injury aid and treatment pocket book was validated by experts in this field, namely health material experts and learning media experts. The results of the product assessment are as follows:

**Table 2.** Data from the Assessment of the Pocket Guide by the first Stage Material Expert

Aspect assessed	Score obtained	Maximum score	Percentage (%)	Category
Feasibility of material content	46	66	70	Good

The percentage obtained during the second stage of validation increased from 70% to 90% of the highest score. Therefore, it can be concluded that the pocket book, which was assessed from the viewpoint of the appropriateness of the material content, received a "very good" category at the second validation stage. At the second validation stage, the media expert stated that the book was excellent and recommended a more organized binding of the book

**Table 3.** Data from the Assessment of Pocketbooks by Second Stage Media Experts

Aspect assessed	Score obtained	Maximum score	Percentage (%)	Category
Feasibility of material content	60	66	90	Very Good

On October 11, 2023, 30 11th grade students of SMA Tunas Pelita Kota Binjai participated in the field trial.

**Table 4.** Small Group Trial Questionnaire Results

Aspect assessed	Score obtained	Maximum score	Percentage (%)	Category
Material	228	380	60	Good Enough
Language Readability	375	750	50	Good Enough
Pocket Guide Presentation	201	365	55	Good Enough
Pocket book display	272	605	45	Good Enough
Total Score	1076	2.100	52	Good Enough

**Table 5.** Large Group Trial Questionnaire Results

Aspect assessed	Score obtained	Maximum score	Percentage (%)	Category
Material	300	380	87	Very Good
Language Readability	768	750	91	Very Good
Pocket Guide Presentation	350	365	90	Very Good
Pocket book display	600	605	91	Very Good
Total Score	2018	2.100	89.75	Very Good

### Final Research Product

The final product of this research can be formulated based on expert input and suggestions as well as the results of the large-scale trial at school. The results are shown below, including:



**Figure 2.** Book cover page

Access to product:

(<https://shorturl.at/zLLNS>)

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Figure 3. Preface and table of contents  
 Access to product:  
<https://shorturl.at/zILNS>



Figure 4: Example of injury material  
 Access to product:  
<https://shorturl.at/zILNS>



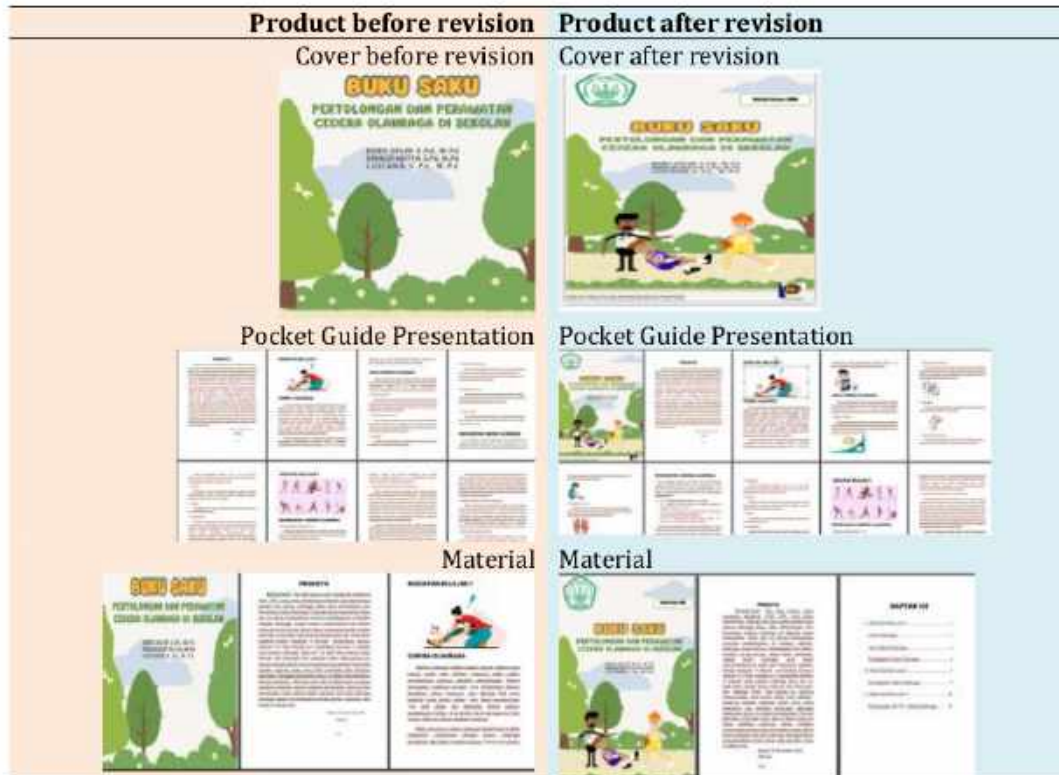
Figure 5: Example of injury care  
 Access to product:  
<https://shorturl.at/zILNS>

Based on the data collected in this study, careful and thorough data analysis resulted in the following:

- 1) Based on the notes from the media experts and material experts, it was decided to make changes to the material. Material on bone fractures was added, and media experts improved
- 2) 14 small group trials were conducted with 4 students after revision.
- 3) The large group trial was conducted with 25 students after the small group trial.
- 4) The results of both groups showed very good or feasible results.

Values from 0 - 20% percent are categorized as not very less, 21 - 40% percent are categorized as less, 41 - 60% percent are categorized as sufficient, 61 - 80% percent are categorized as good, and values from 81 - 100% percent are categorized as very good.





Source: Author's research

## DISCUSSION

The overall presentation of the data above describes the process of data collection and analysis carried out to test the feasibility of the pocket book product developed. In general, the user subjects, namely students as the main users and validators, get a good assessment of the product. From the student user side, the product is very helpful for improving learning outcomes. This can be seen from the increasing learning outcomes of first aid subjects in sports injuries in small-scale and large-scale trials. For the validator assessment involving 3 validators, in general, it gave a good assessment. The finished product is available for students to use as a learning resource after the last revision.

A series of studies have highlighted the importance of first aid pocketbook training in the context of sports injuries. Past research has shown the need to emphasize such training, focusing on school students and sports teachers, and on coaches (Tampi & Olua, 2023). Later the results of this research were extended to specific groups, such as youth red cross members and their supervisors, and parents of preschool children. These studies underscore the important role of first aid in preventing further injury and promoting recovery in the event of a sports-related injury (Huda et al., 2021). This argument is corroborated by the research that the Sports First Aid and Injury Prevention book is a concise manual developed to help teachers or athletic trainers manage common emergencies they may face while coaching their sport (Pfeiffer et al., 2017). Sports Emergency Care: A Team Approach, Second Edition is an innovative text that addresses the special educational needs of athletic training students and emergency medical services who are preparing to handle emergency medical situations in the sports arena (British Medical Association, 2010). Sports Injury Prevention

provides a comprehensive review of the literature on identifying risk factors, understanding injury mechanisms, and risk management appropriate to sports participation (Danardono & Ariani, 2022). This research aims to develop a product in the form of an e-book on how to perform first aid in karate injuries.

This sports injury aid and treatment pocket book is included in the "Worthy" criteria. This statement can be proven by the results of the "Worthy" analysis from material and media experts, as well as small and large group trials. Students are happy with this product because it fosters their interest in learning and getting new information. This is in line with the results of research (Fidiastuti & Rozhana, 2016) that the development product, a textbook that has been revised based on the comments and suggestions of validators, aims to improve the use of textbooks so that they are more effective, effective, and communicative for readers, while maintaining the purpose of preparing textbooks.

The textbook material has been arranged as well as possible so that readers or students can properly understand the material described in this textbook. According to Research Results (Prasetyo & Perwiraningtyas, 2017), the material should not be too little and should not be too much. According to students, this product has several advantages. Among them are the attractive appearance of the book, easy-to-understand content, and the ability to explore new information that is useful for high school students (Sutama et al., 2021). In addition to having advantages, this product has disadvantages, namely some pictures are taken directly from the camera, while most pictures are taken from the internet. There are some shortcomings, but more attention and development efforts can be made to produce a better product. Along with this fact, there will be more opportunities for continuous improvement. After testing the product on small and large groups, the advantages and disadvantages of the injury care and rescue pocketbook can be identified. For the previous age of high school students, it is most likely that there is no knowledge about injury help and care. This injury aid and treatment pocket book is designed with interesting and easy-to-understand ideas, so it is hoped that students will be interested in learning about it and gaining more knowledge (Tikna & Pratama, 2021).

## CONCLUSION

Conclusions expressed in the sports injury aid and treatment pocket book developed in this study can be used as a tool to increase knowledge about injury aid and treatment. Overall, after two stages of pilot testing, this sports injury aid and treatment pocket book is feasible to use to introduce sports injury aid and treatment to high school students. Teachers can now use this development research to introduce sports injury help and treatment to their students.

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