

# Development of a Beginner Level Flexibility Training Model in Learning Archery

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## Abstract

*This research produces archery training products, with various models with flexibility training. Archery is a sport of fine and gross motor skills, where success is determined by the capacity to shoot a target repeatedly with extraordinary precision and accuracy. One effort to get talented archery athletes is to conduct talent scouting from an early age. The program for scouting and developing talented athletes in developed countries whose achievements have been implemented with the support of adequate resources, including from government funds, the community, as well as expert support through cross- and inter-disciplinary scientific approaches. Flexibility shows the extent of movement in the joints. Only with sufficient flexibility can a person carry out a movement task with adequate performance. Because flexibility is an important element of physical fitness which is related to health and also physical fitness which is related to performance (achievement). The aim of this development is that the training model book in this research is to produce training media in the form of a flexibility model pocket book for interactive beginner students on basic theoretical competency material. Theoretical feasibility is seen from the feasibility of the material and the feasibility of the media. This research method uses ten stages of development to dissemination. The average percentage of material feasibility is 91% in the very feasible category, and the average percentage of media feasibility is 85.4% in the very feasible category. This archery technique training model book with flexibility is very suitable for use as training material. In terms of material content, this exercise book is very suitable because all the material contained in it is in accordance with basic competencies. Meanwhile, in terms of media suitability, this pocket book is also very suitable because the learning media used is suitable for the material and learning objectives to be achieved.*

**Keyword:** Flexibility training model; beginner level; learn archery.

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## Introduction

A nation that evolves and changes in step with scientific and technological advancements is united in part by sport. As a result, sport plays a crucial role in bridging the gap in human development overall. In order to accomplish maximum results, including successes in archery, the development and growth of sports must be a shared duty, starting from the center to the regions through existing parent organizations. Archery is a sport that calls for specific abilities, including coordination, precision, and mental preparation in addition to increased physical fitness (Fahrizqi et al., 2021). The growth of archery in Indonesia is a manifestation of the regional growth of this sport (Handoko & Gumantan, 2021). The growing number of associations for archery sports in every Indonesian region has the potential to revitalize the sport and foster its growth (Nofrizal et al., 2024).

Archery is a sport of fine and gross motor skills, where success is determined by the capacity to shoot targets repeatedly with extraordinary precision and accuracy (Prasetyo et al., 2018). One effort to get talented archery athletes is to conduct talent scouting from an early age (Soedjatmiko & Wahadi, 2020). The program for scouting and developing talented athletes in developed countries whose achievements have been implemented with the support of adequate resources, including from government funds, the community, as well as expert support through cross- and inter-disciplinary scientific approaches. One of the problems that occurs in archery clubs is the lack of attention to talent scouting, making it difficult to find archery talent, even though the potential for developing the sport of archery itself is still wide open. Many elementary school (SD) children still choose sports that are team games such as football, volleyball, basketball, etc. Children who want to take part in archery are still constrained by equipment, because the price is relatively more expensive compared to equipment for team sports. Meanwhile, it is very clear that the achievements will be reaped. If it starts from an early age, most people know/learn archery when they are teenagers.

When drawing a bow, someone who lacks flexibility will likely find it more difficult to perform the muscle motions they need to, and the results will be rigid and unappealing. Thus, it is necessary for all gymnasts to have strong body flexibility, especially those who perform rhythmic gymnastics. Therefore, whether working with a coach or on their own, a gymnast needs to work on their own physical flexibility. "A person's flexibility is their capacity to move their body and its parts through the greatest range of joint motion without causing harm to their joints or the surrounding muscles" (Arisman & Okilanda, 2020).

Flexibility shows the extent of movement in the joints. Only with sufficient flexibility can a person carry out a movement task with adequate performance. Because flexibility is an important element of physical fitness which is related to health and also physical fitness which is related to performance (achievement) (Sari & Nurrochmah, 2019). The emphasis that must be given to rhythmic gymnastics is rhythm, body flexibility and continuity of movement (Budi et al., 2024). Rhythmic gymnastics is very interesting to learn because it contains elements of very beautiful movements accompanied by music (Fauzi et al., 2022). To perform movements in rhythmic gymnastics, flexibility, balance, fluidity, flexibility, continuity and accuracy with rhythm are required (Siregar et al., 2024)

The main issue is that participants' degrees of expertise and physical prowess vary. Absence of fundamental knowledge a lot of people don't know the fundamentals of archery or how important flexibility is. Inadequate practice area and equipment, as well as restricted access to archery supplies. Participants' varying levels of motivation some participants may not be as motivated as others, which could hinder the training's advancement. Coach ignorance arises from the possibility that the coach is inexperienced in teaching flexibility in the context of archery. Making a training program that is modular will allow participants to follow it in accordance with their skill level. Participants in the group, for instance, based on their background and level of fitness (Yachsie, et al., 2021).

Theoretical information on the fundamentals of archery and the value of flexibility before beginning physical training. This can aid participants in comprehending the goal of every exercise. Work together with sponsors or athletic associations to secure the necessary gear. Think about utilizing easy-to-use tools that are available to all participants. Incorporate enjoyable training techniques, such mini-competitions or games, to keep participants engaged. Establish a rewards scheme for participant accomplishments (Asaribab & Siswantoyo, 2015). Plan on educating trainers in the flexibility and methods of archery. Their capacity to deliver instruction effectively may be enhanced as a result. Create flexibility drills that you can incorporate into your archery training program. For example, do stretching and muscle strengthening sessions before and after archery practice (Ikhsan et al., 2020).

## Method

The research method used is research and development (RnD). In the Research and Development method in six steps (1) Potential and problems, (2) Data collection, (3) Product design, (4) Design validation, (5) Design revision, (6) Product testing, (7) Product revision, (8) Usage trials, (9) Product revision, and (10) Mass production (Taufik & Mus'id, 2020). The population in this study includes novice archery participants, individuals who are just beginning to learn archery, with no previous experience in this sport. Age may vary, but it is best to focus on a specific age group (for example, adolescents or young adults) for consistency. Archery coaches who have experience in teaching archery and an understanding of the importance of flexibility in archery technique.

Archery clubs or communities are organizations that provide archery training and have beginner participants. Samples were taken from the population by means of purposive sampling techniques taking samples based on certain criteria, such as participants who are just starting to learn archery and experienced trainers. This allows the researcher to obtain relevant and in-depth information. Stratified sampling If the population is large and quite varied, divide the population into several strata based on age or fitness level, then take a sample from each stratum. The sample size should include 20-30 novice participants for the initial trial of the training model. Involve 3-5 trainers to get feedback and evaluation from various perspectives.

Participant sample criteria 15 - 19 years old (if focusing on adolescents or young adults). No previous experience in archery. Coach has at least 2 years' experience in teaching archery. Understand the principles of flexibility in sport. By determining the population and sample appropriately, this study can generate relevant data to develop an effective training model.

Research instruments using knowledge and attitude questionnaires were used to measure participants' knowledge of basic archery techniques and the importance of flexibility. It contained questions about the participants' understanding of the training objectives and their motivation.

Participant satisfaction questionnaires collect feedback on the training experience, the quality of the materials and the teaching methods used. Observation sheets are used by the trainer or researcher to record participants' performance during the training. Focus on archery technique, level of flexibility, and adaptability to the exercise. Notes may include both physical and technical aspects, such as participants' posture, consistency and progress. Physical tests, flexibility tests to measure participants' level of flexibility before and after the training program, such as toe touch tests, back flexibility tests. This data helps evaluate the impact of the training program on participants' physical flexibility.

Structured or semi-structured interviews are conducted with participants and trainers to explore their experiences during the training. Questions may include challenges faced, perceived progress and suggestions for improving the training model. Daily diary or training journal documentation records participants' progress at each training session, including progress and areas for improvement. Testing the training model Model Evaluation Questionnaire After implementing the model, administer a questionnaire to evaluate the effectiveness and relevance of the training model developed.

Two archery coaches and one media expert participated in the expert assessment process used for content validation in this study. Questionnaires were distributed to the extracurricular archery students of SMAN 1 Trawas to collect data. The data collection tool had three assessment indicators (1) presentation of material (2) appearance and (3) learning. The procedure for collecting data was to set a data collection schedule, prepare a pocket book on basic archery training for students and hockey coaches, distribute questionnaires after respondents read the materials provided, tabulate questionnaire data after the required number of respondents was reached, conduct data analysis and draw conclusions from the data.

Techniques for data analysis play a crucial role in research, especially development research. The research methods employed have a significant impact on the application of data analysis techniques. Both quantitative and qualitative data analysis techniques are used in development research using a mixed method approach. Statistical data is used to process data in quantitative data analysis procedures. As a result of the study, researchers offer descriptions of each statistical data set. Researchers can utilize the qualitative data analysis models developed by Miles & Huberman and Spradley as tools for data analysis. For instance, data reduction, data display, and conclusion drawing are all included in the Miles & Huberman data analysis paradigm. The simultaneous application of quantitative and qualitative data analysis approaches is crucial in development research. These two methods of analysis can enhance one another. The data analysis is more thorough and full (Islami et al., 2024).

Data analysis techniques play an important role in research, especially development research. The research method used has a significant impact on the application of data analysis techniques. Quantitative and qualitative data analysis techniques are used in development research that uses a mixed methods approach. Statistical data is used to process data in quantitative data analysis procedures. As a result of the research, the researcher offers a

description of each set of statistical data. Researchers can use the qualitative data analysis model developed by Miles & Huberman and Spradley as a tool for data analysis. For example, data reduction, data presentation, and conclusion drawing all fall under Miles & Huberman's data analysis paradigm. The simultaneous application of quantitative and qualitative data analysis approaches is essential in development research. These two methods of analysis can enhance each other. Data analysis becomes more thorough and complete (Islami et al., 2024).

## Results

The training process for coaches and extracurricular students is impacted by literacy in archery because it can supplement current knowledge and communicate knowledge that coaches have not yet shared. Students who participate in archery extracurriculars might become more proficient independent practitioners by using basic technique model books. There are still not many archery training model books available, though. There are still not enough archery-related literature at SMAN 1 Trawas, and archery training books are still not widely available. The teacher bases the fundamental skills he teaches on his personal archery experiences. The general population is still unaware of the sport of archery, as even the archery players at SMAN 1 Trawas only discovered it when they first arrived.

A practice book for fundamental archery techniques has been developed by researchers as training materials. Canva was used to create the cover and Microsoft Office Word 2016 was used to create the contents of this learning exercise book. In accordance with training materials for the Basic Archery Technique were created at SMAN 1 Trawas using a research and development methodology. Six stages are employed in this research: potential and issues, data gathering, product design, design validation, design enhancement, and product testing. Training materials, reference books on fundamental archery skills, and assessment questionnaires are given to validators in order to do this evaluation. Material specialists and media experts are the validators in question.

Language, learning support, and topic appropriateness are all considered in material expert assessment. The following data comes from validator evaluations and validation results. The validator was tasked with carrying out the expert assessment, which involved creating a teaching manual for fundamental archery techniques. The assessment consists of four verified components: language, learning assistance, appropriateness, and content suitability. The content specialists provide validation for each of these criteria. The following are the outcomes of validator evaluation and data validation

Tabel 1. Material expert validator assessment results data

Criteria	Indicator	$\Sigma$ Per Aspect	Score (%)	Category
Contents	Material compatibility with foundational material Correctness of the content Recentness of the content Promote inquisitiveness	4,79	95,8%	Very Worth It

Learning supporter	Presentation Supporting Techniques for Presentations Coherence of Learning Presentation and Thought Flow Sequence	4,5	90%	Very Worth It
On to language	Straightforward Communicative Dialogic and interactive Suitability to student development Conformity to language rules	4,56	91,2%	Very Worth It
Average		4,56	91,2%	Very Worth It

Two archery instructors evaluated the teaching materials for basic archery techniques. The content feasibility component received a percentage of 95.8%, the learning support aspect received a percentage of 90%, and the language appropriateness aspect received a percentage of 91.2% according to the results of the material expert validation evaluation. The two experts' assessments and the material expert's declaration that the created basic archery technique training model book product is appropriate for field testing support the idea that the training materials for basic archery techniques are very appropriate.

Tabel 2. Data from media expert validator assessment results

Criteria	Indicator	ΣX Per Aspect	Skor (%)	Category
Aspects of presentation assessment	Sample book dimensions	4,27	85,4%	Very worthy
	Sample Cover Design for a Book			
	Content design for model books			

Teachers from the State University of Malang evaluated the fundamental archery technique training model book as a product. In order to ensure that the media created by researchers is of high quality and presents visual aspects in learning media in the best possible way, validation by lecturers with expertise in the field of media seeks to gather data, critiques, and recommendations. The expert validation assessment's percentage for the presentation aspect came out to be 85.4%. The media expert's assertion that the designed basic archery technique training book product is appropriate for field testing supports the physical education learning model book product's high viability.

Material specialists and media professionals evaluated the training material product, which was a book on basic archery technique training models. There are four indicators totaling seven evaluation items in the material expert validation assessment results for the content feasibility element. 95.8% was the average percentage and 4.79 was the average score received from the validation results. The learning assistance component has two indicators, each with seven assessment items. The material experts' validation results have an average percentage of 90% and an average score of 4.5. Regarding the practicality of talking about the model book, there are nine evaluation factors and five indications. An average score was calculated from the validation results conducted by material specialists.

The two experts' assessments and the material expert's declaration that the training material product in the form of a basic archery technique training model book that has been developed is appropriate for field testing support the idea that the training material in the form

of a book is highly feasible. Thus, the evaluations from the two material specialists fall into the extremely suitable category. The validation evaluation conducted by media specialists yielded an average score of 4.27, or 85.4%, based on 11 assessment items and three key criteria for evaluating the presentation's appropriateness. Therefore, the relevant eligibility group includes these outcomes. The fundamental archery technique instruction model book falls into the extremely practicable category based on the validation results from media specialists, and product trials can be conducted. 24 students from grades 10 through 12 who participated in extracurricular archery at SMAN 1 Trawas participated in the trial. Students were given a Basic Archery Training model book to study throughout the trial period. After doing so, they were required to submit an assessment. The following table displays the test phase respondents' assessments

Tabel 3. Data from trial results training materials model book training basic archery techniques

Assessment Aspects	$\Sigma X$ Per indicator	Score (%)
Material	4,31	86,2%
Appearance	4,29	85,8%
Learning	4,40	88%
Average	4,33	86,6%

The category was very viable, with an average score of 86.2% on the material aspect test results. With an average score of 85.2%, the display aspect falls into the category of highly worthy. The model receives an average score of 88% in book language, placing it in the very worthy category. Thus, using very good standards, the average score achieved from all aspects is 86.6%.

## Discussion

Two archery trainers evaluated the basic archery technique training model book as a product. The content feasibility component received a percentage of 95.8%, the learning support aspect received a percentage of 90%, and the language appropriateness aspect received a percentage of 91.2% according to the results of the material expert validation evaluation. The goal of media experts' validation is to gather data, critiques, and recommendations so that the media produced by researchers is of high quality and presents visual aspects in learning media in the best possible way. The expert validation assessment's percentage for the presentation aspect came out to be 85.4%. The media experts' assertions that the fundamental archery technique model book product is highly practicable serve as further evidence (Cendra & Sasmariato, 2023).

In order to be a good archer in a game, you must first learn the fundamental techniques. These are the first skills that archery players need to learn in order to be a supporter. According to the findings of the data collecting process, which involved interviewing archery trainers at SMAN 1 Trawas, each student participating in extracurricular archery needs training materials. Students that participate in archery as an extracurricular activity can benefit from this training

resource, which is a book that serves as an archery model. According to (Thomas & Affiliations, 2013), training materials are media that are created with the purpose of developing human resources and enhancing individual or group performance. They are carefully and suitably prepared to ensure that these objectives are met when conducting a training session.

The training model book for basic archery techniques is an excellent resource for training purposes. Because all of the content in this model book aligns with fundamental competencies, it is highly appropriate in terms of content. In the meantime, this model book is also very appropriate in terms of media suitability, as the learning medium employed is appropriate for the subject matter and the learning goals to be met. in line with the assertion that appropriate learning materials should constantly be tailored to the subject matter and established learning objectives. This is also consistent with (Oktafiranda et al., 2021) assertion that the goals to be met and the content or learning material must be taken into consideration while utilizing learning media, including learning resources and tools. As stated.

The distinction between previous and current research is that the former may have placed more emphasis on physical training or fundamental archery skills without giving flexibility any special thought. highlights the creation of a model that specifically incorporates flexibility training to enhance the skills of beginning archers. employs more conventional training techniques and might not take flexibility exercise differences into account (Oktafiranda et al., 2021). Employing more creative methods, including fusing flexibility-focused physical training with archery tactics, or utilizing technology or assistive gadgets. may not be limited to novices and may encompass a larger group.

Concentrate on novices and use more focused sampling to gather precise and pertinent data. If measurements are made without thoroughly analyzing flexibility, they might only include technical aspects of archery employing more thorough measurement techniques to evaluate flexibility variations and how they affect archery performance (Pratama et al., 2022). The findings might be more broad in nature and do not offer any concrete suggestions for enhancing flexibility in an archery setting. It is anticipated that it will result in useful advice for trainers and athletes as well as immediately applicable training models(Yachsie, Prasetyo, et al., 2021).

## Conclusion

A fundamental model book in the archery learning stage is the fundamental Archery Training model book used for extracurricular archery at SMAN 1 Trawas. The goal of this model book is to reinforce the fundamentals of archery while streamlining the learning process. The fundamental information in the Basic Archery Training model book is presented simply for students to better understand. With a percentage score of 90.6%, the Basic Archery Training Model Book received a score of 4.53. Thus, it can be said that students who participate in the archery extracurricular at SMAN 1 Trawas can benefit from using the Basic Archery Training Model Book as training material.

The Basic Archery Training model book contains all of the information that students who are just beginning to participate in archery extracurriculars need to know, starting with material about the equipment used, the infrastructure and facilities in archery, and especially about basic



techniques in archery. This can help address the issue of students not being literate about archery. The basic method is described beginning with body alignment, stick holding position, and basic technique goal. Students who participate in independent archery extracurricular activities can utilize the Basic Archery Training model book as an alternative instructional resource and supplemental training.

## Author Statement

I hereby declare that the scientific work I have produced has never been published in any publication and is the real outcome of the research I conducted. The administration of the Porkes Journal and the Hamzanwadi University study program for physical education, health, and recreation is prepared to censure them if there are any parallels with other people's work.

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