

**Deliberate Practice and Functional Performance Characteristics in Young Basketball Players**

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### **Abstract**

This research proposal presents an intensive quantitative exploration of the association between purposeful practice and functional performance attributes in young basketball players. The primary objective of the study is to provide a comprehensive understanding of the manner in which structured and deliberate training activities impact particular on-court characteristics. A diverse sample of young basketball players (N = 100) aged 10-15 will be recruited to partake in the study. The research design involves the meticulous assessment of purposeful practice, using structured questionnaires to gauge the number of hours, frequency, and nature of training activities completed by participants.

The quantitative measures include the investigation of essential functional performance attributes, such as agility, speed, endurance, shot accuracy, dribbling ability, and game intelligence. Standardized and validated examinations and performance assessments will be utilized to obtain quantitative data and build baseline measures of on-court ability. The primary ethical considerations in the research will focus on protecting the confidentiality, ensuring the informed consent, and adhering to the ethical principles during the research process. The empirical findings of the research will be scrutinized statistically in a range of ways, including correlation analysis and regression models, to identify the association between purposeful practice factors and the functional performance outcomes. The quantitative data will be portrayed descriptively, supported by inferential statistics to investigate probable patterns and relationships.

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## **Introduction**

Basketball is a complex sport requiring a combination of physical attributes and technical ability for success on the court. One of the key concepts in the acquisition of skill in basketball has been the construct of deliberate practice. Deliberate practice is 'engagement in structured and challenging practice aimed at improvement of performance in a specific domain' (Ericsson & Harwell, 2019). The purpose of the current investigation was to analyze the association between deliberate practice and functional performance characteristics in basketball players. Functional performance characteristics will refer to specific basketball skills (e.g. shooting, dribbling, and defending, rebounding, passing) and aptitudes (e.g. agility, balance, speed, and cardiovascular endurance).

## **Background**

It's one of the most popular and exciting games out there, with fans from across the globe having followed since December 1891 when Dr. James Naismith nailed a peach basket up in a Massachusetts YMCA. From those humble beginnings, the sport has rocketed, captivating its audience with its fast-paced action and high-flying athleticism (Lima et al., 2020). As basketball has changed, adding new rules, and tweaks to how the game is played and coached, one thing has always stayed the same. Amidst the drills, and exercises, has been a need to develop mastery of the games core skills. It has long been known amongst coaches and players that mastery of shooting, passing, dribbling, defense, etc., was paramount to having success on the hardwood (Macnamara et al., 2016).

The world of sports development has been changed significantly in recent years, as a new platform emerged and completely altered how teams and organizations would move forward to skill perfection. Deliberate practice, a notion popularized by a noted psychologist, is now at the forefront of everything an organization and player does when it comes to skill development; slowly moving along with systematic and focused training to pick up skill and expertise. Deliberate practice improves on an individual's skill and forces him/her into the areas outside of their comfort zones frame in order for themselves to flourish by attempting to improve on that performance (Kulasegaram et al., 2013).

Deliberate practice has changed the game when it comes to basketball skill development. Players no longer go through the motions or have to rely on natural ability, instead engaging in sessions that were meant to go to specific areas that they have as weaknesses or areas that they can excel in. Conversely, become good to great. These drills, exercises and this simulation work that now includes throwing a myriad of subtle nuances in there versus just going hard for x amount of miles gives a basketball player a much better resource to make their game whole (Ericsson, 2009). When taking apart a player's game through intelligent and regiment training, a basketball player will find out what needs to be improved and how it needs done exactly.

The art of shooting, the intricacies of where your feet were and what this does to the shooter on the catch, where player needs work on that jump shot which makes this pairing a match made in heaven. Not to perceive themselves as finished product, but for a player that goes out to practice with a ton of natural talent that requires far less polish to still have your team go a-to-b in what needs improved, automatically amplifies everything you are trying to accomplish. Not to mention any implications of deliberate practice, that trickle down to the title-hopeful team you have. It makes any basketball player you have better. But when everyone is in lockstep on anything you can possibly do to make their team better individually, that inadvertent refinement of every little thing bleeding over into the total package. That's when we all need to be pretty excited to see what happens when this team gets that all-the-way right (Anders Ericsson, 2008).

It is critical for the development of young basketball players, given the increasing focus on athletic performance and skill acquisition in contemporary sports. Despite the acknowledged principal role of deliberate practice in skill development, the impact of such this form of dedicated practice on important functional performance characteristics of young basketball players is not well understood (Ericsson, 2020). This is the delineated objective that this research address, as deliberate practice for the development of shooting accuracy, defensive ability, and precision of passing and total athletic capabilities would yield evidence that could inform competitive coaching and training strategies to enhance the growth, maturation and development of young basketball athletes thus fostering increased success in the youth basketball program.

## **Rationale of the Study**

This particular exploration is relevant because the existing literature on the relationship of deliberate practice and functional performance characteristics in young basketball players is quite sparse. Deliberate practice has been studied in myriad clusters from music to chess, but very few studies exist that examine such dedicated practice within the context of youth basketball (Ericsson, 2020). This is a domain that can be plumbed to ascertain how deliberate practice affects the attributes necessary for potential on-court success.

Previous research into the conceptualization of deliberate practice has been at a general level rather than specific to either its execution within youth basketball and evaluating its efficacy (Ericsson, 2006). In part, this study can be used more specifically to inform the development of youth basketball developmental programs and how deliberate practice techniques may be incorporated and in this sense extend upon that work. At a second level, understanding how it influences the fine grain functional performance characteristics of young basketball players is an important goal for improved player and team performance. Identifying which deliberate practice tactics might be most effective for young basketball players could realize considerable improvements in player developmental outcomes and performance. As such, the results of this study may enable research in identifying these for a wide range of sports and in developing youth sports programs in general.

### **Research Question**

How does deliberate practice influence the functional performance characteristics of young basketball players?

### **Research Aim**

This research aims to investigate the influence of deliberate practice on functional performance characteristics in young basketball players.

### **Research Objectives**

1. To investigate the impact of deliberate practice on specific basketball skills such as shooting accuracy, defensive techniques, pass accuracy, and dribbling performance.

2. To determine the influence of deliberate practice on general physical characteristics including speed, agility, power, and endurance in young basketball players.
3. To analyze how deliberate practice impacts upon game intelligence and decision making in young basketball players during game-play.
4. To compare the functional performance characteristics of young basketball players who undertake deliberate practice training with their non-deliberate practice training peers.

### **Scope of the study**

The purpose of this study is to explore the influence of deliberate practice on the functional performance attributes of 10-15 year old basketball players. Deliberate practice is a segment of practice that is highly structured, goal-oriented with the focus of skill improvement. The intent of this study is to explore the influence of the different forms of deliberate practice on the functional performance attributes of on-court agility, speed, endurance, shooting, and ball handling. Exploring this relationship would offer valuable insight surrounding how young basketball players should be best coached and developed. Understanding how deliberate practice influences improvements in these functional performance attributes is critical in the development of programs that need to be tailored and periodized to the growth and maturation of basketball players. This study will utilize the data of functional performance attributes of 10-15 year old basketball players that are involved in structured skill development programs. This study will use quantitative insights and qualitative feedback to understand how deliberate practice influences the changes in on-court attributes.

### **Literature Review**

Deliberate practice has been a cornerstone approach and has been the principle of research in various domains such as sports, music, and chess as conceptualized by Anders Ericsson and has been the focus of several research studies. Deliberate practice is defined by highly structured and goal-oriented training sessions designed for aspiring to optimal performance with an aim of expertise in a specified domain. Substantiating these findings, Ericsson and Harwell (2019) completed a seminal study chronicling skill acquisition over time in basketball to identify that deliberate practice was significantly associated with improvement in performance measures. This body of work helps to emphasize the importance of repetitive and

focused training designed to facilitate the development of basketball skills amongst young athletes.

Macnamara, Hambrick, and Oswald (2014) conducted an influential meta-analysis of deliberate practice across multiple domains, including sports, offering a more general perspective on the relation between deliberate practice and performance. Across diverse areas, the meta-analysis revealed common underlying mechanisms, clarifying the effectiveness of training focusing on task performance. This work provides insight into the shared aspects of deliberate practice and their role in shaping functional performance characteristics in young basketball players (Hambrick, Macnamara, Campitelli, Ullén & Mosing, 2020).

The work by Gledhill, Harwood, and Forsdyke (2017) exploring World and Olympic champions' perceptions of the factors informing the development and maintenance of expert athletic performance. This revealed the experience and understanding of elite performers in relation to deliberate practice, elucidating critical psychological and environmental traditions that must be considered in the design of tailored deliberate practice approaches to training of young basketball players that can be utilized to optimize training strategies.

Memmert and Furley (2019) provided an example with their work on the deliberate practice of perceptual-cognitive skills in sports. This underlined the cognitive elements that contribute to sport expertise in general, and it outlined the specific cognitive aspects that deliberate practice would need to target in the optimization of perceptual-cognitive skills in basketball players. This embodies a cognitive perspective that is essential to developing a detailed understanding of the deliberate practice paradigm. This perspective is critical in learning to appreciate the influence of cognitive factors affecting the optimization of functional performance characteristics in young basketball players.

Jafar et al. (2023) provide an excellent example of how an article discussion can conceptually integrate this key research and extend the dialogue by considering the sustained impact of deliberate practice on performance outcomes over time. Together, these studies weaved a seamless story arc, joining the theoretical underpinnings of deliberate practice, the practical implications for functional performance, and the temporal sequences of those relationships across the early development of functional performance characteristics in young



basketball players. Knowing precisely when and how deliberate practice interfaces with functional performance characteristics in young basketball players is therefore vital to optimize player development programs in youth sports in general, and young basketball players in particular.

***Hypothesis: Deliberate practice would positively interface with functional performance characteristics in young basketball players.***

### **Deliberate Practice Theory**

Deliberate practice theory was first outlined by psychologists Ericsson, Krampe, and Tesch-Romer in 1993. The theory was designed to explain how people could attain levels of expertise and performance once thought the domain of innate talent. Central to deliberate practice theory were a set of principles that included: setting specific, time bound, efforts to improve some aspect of ability or performance; giving their full attention to the specific activity or goal at hand; receiving some feedback about how well they are performing that specific task and then adjusting that performance; repetition with and without variation of that skill thousands upon thousands of times over many years, often with and sometimes without external challenges or alterations that might force adaptation and transfer of that skill; and high levels of interest, effort, perseverance such that the activity or pursuit is inherently effortful and challenging and generally quite stressful or difficult for the individual; checked up frequently and carefully by a knowledgeable coach, teacher, tutor, parent; or mentor who provides close, detailed teaching, instruction, examples, models, feedback, examination, inspection, periodic tutoring, and support: and finally self-regulation or reflective practice where individuals continually analyze and evaluate their own performance through some similar task, identify the most important movement constraints that need to be addressed and how best to address them, and then do those things.

Deliberate practice theory has been widely applied to the development of expertise and mastery in the domains of sports, music, chess, and academia, among others. In basketball, deliberate practice is used by players to develop their fundamental skills in an effort to maximize performance and, ultimately, their on court success. Deliberate practice in basketball has been described as “highly structured training activity with the sole goal of improving performance”

(Jafar, 2023). These generally consist of structured drills, “playing of empirical games under the guidance of the coach, and strategic learning activities, with each activity precisely designed to develop each of the small performance units that will be utilized during a total effort that trained to accomplish a specific competitive purpose such as a game or a season” (Jafar, 2023). It is imperative in the development of skill and performance in basketball players.

### **Functional Performance**

Functional performance characteristics are physical and technical attributes contributing to a player’s overall on-court effectiveness in basketball. Their optimization is vital for competitiveness in basketball and for player development. The objective of this study is to elucidate the relationship between deliberate practice and functional performance so that we can gain understanding of how these purposeful sessions are impacting the acquisition and manipulation of a litany of skills necessary for on-court success in basketball (Soares et al., 2020).

Countermovement jump (CMJ) is a common measure that is used to assess explosive power, which is essential for many game actions in basketball such as shooting, rebounding, and defending. Line drill is one of the tests used to assess agility, speed and endurance which are all critical components of effective basketball performance. The purpose of this study is to use these functional assessments to gain a more holistic and comprehensive understanding of how deliberate practice is impacting specific physical components in basketball players (Macnamara et al., 2016).

The proposed study will focus on deliberate practice in shooting, dribbling, defending, rebounding and passing. Specific skills in the mentioned areas will be determined which will give the equipment to measure each president (Ericsson, 2016). This study will uncover the extent of the training strategy and economy that each skill suits better, that deliberate and purposeful training is more decisive in the impact of skill acquisition, muscle memory, and athlete performance (Anders Ericsson, 2008). This research proposal will also investigate the relationship between deliberate practice and functional performance characteristics in young basketball players. We are researching into the acquired skills associated with the deliberate practice, presenting a contribution to the now substantial literature on the optimal methodologies for youth basketball development (Ericsson, 2016). This study will also analyze specific skills and

present information to strengthen methodologies for youth basketball trainers. The associated and acquired specific skill that will be investigated is the countermovement jump (CMJ) assessment (Ericsson, 2016), and the acquired “defensive slides/line drill.” This study will further open new research lines and response doors to coaches, trainers and players by providing more depth to the teleological approach of how functioning performance and specific skills not only develop, but more possible improve during basketball activities (Di Domenico, 2023).

### **Methodology**

The methodology section will explain the rationale for the chosen methodology, providing a reason behind the research process.

#### **Need, Type, and Research Process**

Individuals and organizations research in order to find potential solutions to problems that affect them. Quantitative research is defined as: “An approach for testing objective theories by examining the relationship among variables. These variables can be measured, typically on instruments, so that numbered data can be analyzed using statistical techniques. Ultimately, this research will produce a precise measurement of the specific relationships between one or more variables” (Creswell, 2008, p. 214). Research takes place in order to establish new knowledge, or building on existing knowledge in an attempt to create new concepts, ideas and understandings. This may additionally include prior research being analyzed and synthesized in order to provide fresh and cutting-edge outcomes (Western Sydney, 2020). This particular study seeks to establish the impact of deliberate practice on functional performance characteristic in young basketball players. Study uses a quantitative approach that analyses the relationship between independent and dependent variables. The selection of selection method for this research is driven by the type of data. The researcher used exploratory quantitative data because the primary object for this research is descriptive and analytical. The data is collected through a structured questionnaire and will be handled as a web survey.

#### **Research Design**

This section appraises the research design basing on several aspects such as research philosophy, approach, and strategy and time horizon.

### **Research Philosophy**

Research philosophy refers to the set of beliefs and assumptions that shape a researcher's research methodology. It gives the basic framework for viewing, creating, and interpreting knowledge with respect to research. Research philosophy can be used in three contexts Realism, interpretivism and Positivism. Saunders research onion represents as the most suitable one for this research because it comprises a number of options based on the various activities that are related to research. Research philosophy guide the researcher to decide the nature and reality of knowledge (Melnikovas, 2018).

The research philosophy adopted for this study is positivism. Positivism is consistent with the study's objective in that it is concerned with determining the relationship between work values and employment choice. Positivism puts a premium on empirical evidence, unbiased observation, and systematic analysis as the determinants of meaningfully valid conclusions. In this way, the study aligns with the positivist philosophy to provide an objective understanding of what factors determine innovation in the cosmetics sector.

### **Research Approach**

There are two research approaches that are in research onion; deductive and inductive research approaches (Saunders, Lewis, & Thornhill, 2009). 'Inductive research relates to the generation of new theory emerging from the data; it is data driven. Deductive research: assumes a cause and effect relationship and tests theory against the data' (O'Leary, 2005: 14). The deductive research approach is one that follows an intellectual structure of existing thoughts to test the association between variables (Hair, 2015; McBurney and White, 2012; Pattern and Newhart, 2017; Saunders et al., 2009; Bryman & Bell, 2014). The research approach chosen is deductive. It offers a logical and systematic arrangement for assessing how the identified work values on employment choice are related to the components of innovation.

### **Research Strategy**

In this study, the research strategy chosen is the survey strategy. Survey strategy is a methodical strategy where rigorously designed questionnaires are formulated and the target respondents are handed these by surveyors who then collect data (Satishprakash Shukla, 2020). It is based on the generation of quantitative data. The use of structured questionnaires allows for respondents

to the survey to be measured about their perceptions, attitudes and opinions about specific work values; and the way they assist in the creation of a culture of innovation in the workplace. The fundamental strength of quantitative data is that it receives robust statistical analysis, trend spotting and spotting correlations that can shed light on the associations that are under scrutiny.

### **Time Horizon**

The study is using a cross-sectional time horizon as depicted by the different data collection carried out by the researcher.

### **Data Collection Instrument**

Questionnaire was used as the method for collecting data for the purpose of this research, given that the researcher had a mono method.

### **Research Population and Sample**

Population refers to the totality of all items or people of interest to a researcher, and of which the researcher wishes to generalize the findings of a research study (Azuka, 2012). According to Cannon (2015), the universe of units being studied is known as a population. Various types of populations can exist for a study and this include; finite and infinite populations, homogeneous and heterogeneous populations, existent and hypothetical populations, known and unknown populations (Cannon, 2015). Conversely, a sample is a subset of the population that is selected in a research study (Azuka, 2012).

As Bulmer and Warwick (2017) further point out, in research, a sample is a subset of the population, where the sample is used to represent the entire population and, thus, the measurements of a sample are used to describe the population from which the sample was selected. The data collected from a selection of the population helps the researcher to organize the data, facilitates the research process and saves time (Shackle, 2017). Researchers apply various research methods so as to reach the objective of research. There are two types of sampling these are; probability sampling and non-probability sampling. In probability sampling, all the units in the population have an equal and fixed probability of selection. Conversely, in a non-probability sample, all the units have no fixed probability of being selected (Satishprakash Shukla, 2020). The research population for this study is the deliberate practice and functional

performance characteristics in young basketball players. A representative sample of this population will be selected using a purposive sampling technique.

### **Data Collection**

Data will be collected through a structured survey of the sampled sample. The validated scales and existing measurement tools related to the identified deliberate practice and soft factors in KaiHua clocking will form the basis for the structured survey. A Likert-scale questionnaire is used in a survey which requires the participant to indicate a response that best represents their relationship with the situation (Zheng, 2021). For education, participants are given a statement and are then asked to state whether they strongly disagree, disagree, neutral, agree or strongly agree. The following are the numbered steps that the research follows.

The survey will be conducted in a manner that will maintain volunteers' privacy and confidentiality and ensure informed consent.

Participants will be appropriately debriefed before the end of the study prior to survey administration. Support for their right as respondents to understand their responses is first understood. Participation is wholly abided to the participant and access provided to their completed survey after fully informed. The confidentiality of data provided will be assured. The survey will be administered electronically. Tracking reminders and follow-ups will maximize participation and response rates.

### **Data Instrument**

The survey questionnaire will be the primary data instrument. It will be comprised of Likert-scale items for assessing the extent of agreement or disagreement with statements in which related soft factors and product innovation capability were identified (Mamabolo, 2019). It will be vital to the comprehensive review of the relevant literature to ensure questioning is valid and comprehensive. Items from established measurement scales that are adjunctive with the purpose of the study will be adapted where necessary or selected. The purpose of the questionnaire is to gather data from the participants to examine deliberate practice and functional performance characteristics in young basketball players.

### **Data Analysis**

As the data were closed-ended questions, the data were entered into the SPSS for statistical facts. SPSS stands for statistical package for social science. Nagaiah and Ayyanar (2016) characterizes SPSS as a window based program that can be used for managing data, analyzing data and creating tables, charts, and graphs. The first step in data analysis is checking the normality and adequacy of the data. In order to avoid this researcher used the descriptive statistics and normality test in SPSS. For the data analysis, descriptive and inferential statistical techniques will be integrated to obtain meaningful conclusions from the gathered quantitative data. Descriptive analysis will be implemented as the first procedure of analyzing the survey data. This analysis will compute measures of central tendency (e.g., mean and median) and measures of dispersion (e.g., standard deviation) for the responses to each survey item. These statistics will help identify participants' perceptions of what elicits superior and inferior performances in young basketball players by illustrating trends and variations within the data. Correlation analysis will then be used to explore probable associations among the identified young basketball players. Pearson correlation coefficients will be computed to gauge the strength and direction of the linear associations between these variables. The findings of this analysis will be used to investigate the relationship between deliberate practice and functional performance characteristics in young basketball players (Abulela, 2020).

A multiple regression analysis will be used to study the relationship of deliberate practice and functional performance characteristics in young basketball players. The coefficients and significance levels of the regression model will be reviewed to see if functional performance characteristics in young basketball players can be predicted from deliberate practice (Haardörfer, 2019). The outcome of these tests will be used to say whether the empirical evidence from the survey data supports or disconfirms the hypothesized relationships. The data analysis tests the research hypothesis against the null hypothesis. Interpretation of the results of the data analysis in this section will be done in the context of the existing research on the research question that is being analyzed (Jones, 2012).

### **Ethical Consideration**

Throughout the research project, ethical consideration will play an important role. Data confidentiality and anonymity will be provided. The researcher will implement ethical guidelines for research with human participants (Rani, 2012). Before participating, participants will be given a short explanation of the aim of the survey, ways in which they will be asked to participate, possible risks and benefits of their participation. The study's participants will be informed that they have the right to decline to be involved and there will be no negative consequences (Hasan et al., 2021).

Voluntary participation only will be allowed. The information will be presented in aggregate form to protect the individual from being identified through their responses (Jones, 2012). The research team will take measures to protect the confidentiality of survey participants. No personal identifying information will be collected and information shared will only be used for research. It will be designed in a way which minimizes any potential discomfort of participants. Survey items will be worded carefully so that they do not offend. Individual differences will be respected and celebrated. The research process will be guided by respect for human diversity in terms of age, ethnicity, social class, sexual orientation, and age (Connelly, 2014).

### **Conclusion**

This research proposal seeks to examine the influence of deliberate practice on the functional performance characteristics of young basketball players. Basketball is a technical sport that requires a combination of physical attributes and technical skills. One factor that plays a significant role in skill development across various domains is deliberate practice. This study aims to provide an in-depth analysis into exactly how the combination of basketball's technical skills of shooting, passing and dribbling and physical aspects of agility, power and endurance are influenced by basketball's deliberate practice.

This research will be carried out using a quantitative approach to understand and interpret the relationship between deliberate practice and on-court performance. A battery of quantitative assessments and qualitative inputs will be used to gain insight into the training history of the participants, and their physical and skill fitness. This will enable the research to question and then



interpret how much the development of the functional performance characteristics of young basketball players is dictated by the input of deliberate practice.

The potential findings from this research are substantial and will add value to the work on the training methodologies utilized by the coaches and programs that are undertaking the development of young basketball players. This understanding of how deliberate practice helps develop players along skills, physical and game intelligence will enable coaches and their programs to design more targeted training regimes that may well result in better players and higher performance on-court.

Based on the importance of deliberate practice, the research proposal will provide an analysis of the relationship of deliberate practice and the functional performance characteristics of young basketball players. It is hoped that through this research will identify what aspects of functional performance are most influenced by general and skill specific practice, and in the process provide valuable input to the developing area of skill acquisition and athletic development in youth basketball.

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