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Serving up Success: Assessing and Improving Tennis Athlete Development Pathways

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Abstract: The primary purpose of this study was to look into what makes tennis players develop and succeed, as well as the most significant problems and obstacles they face on their way to becoming better. Using a mix of methods, numeric and qualitative data were gathered from 526 tennis players from various school programs and levels of experience. The quantitative data was technical, primarily training, tactical skills, mental preparation, competitive experience, teaching, and support networks. On the other hand, the qualitative conversations looked into how athletes felt about these things on a deeper level and perceptions of the coaches on their view of the current development of atheletes and how they could be improved were also the focus of this study. Meanwhile, the players who answered were male and female, from various school backgrounds, and most of them had competed for one to two years. The study found that athletes liked all parts of training but needed more access to expert coaches. These training sites required to be updated had more chances to compete and had trouble balancing their athletic and academic obligations. Qualitative results showed more problems, such as mental stress from high-level racing and not enough help for recovering from injuries. Results showed that there are significant holes in the current growth paths for tennis players. It stressed the importance of making it easier for them to get tools, mental health support, and up-to-date training devices. Based on these results, a complete program was created to remove these obstacles and improve athletic growth.

Keywords: Technical; Primarily Training; Tactical Skills; Mental Preparation; Competitive Experience; Teaching; And Support Networks.

1. Introduction

Tennis is a sport that is known for its physically demanding nature and complex strategic elements. It requires exceptional athleticism and mental strength. Worldwide, countries are consistently working towards nurturing the next tennis prodigies by dedicating resources to extensive athlete development initiatives. These programs aim to refine skills, nurture talent, and navigate the highly competitive tennis arena. China has become a dominant force in the world of tennis, producing renowned players such as Li Na and Peng Shuai (Duerden, 2019). Nevertheless, despite its notable accomplishments, the Chinese tennis athlete development program faces obstacles and prospects for enhancement.

The current state and historical context of tennis athlete development programs in China demonstrate a deliberate attempt to utilize the country's considerable athletic capabilities and direct them towards achieving competitive triumphs on the global level. China, with a population of over 1.4 billion, has a large number of ambitious athletes that are keen to excel in tennis. Chinese tennis officials have created comprehensive development channels to foster talented players from grassroots levels to elite championships. These routes include several aspects of athlete development, such as technical training, tactical skills, mental toughness, competitive experience, coaching knowledge, educational assistance, and strong support systems.

Although the Chinese tennis athlete development program has made significant progress, there are still some persistent hurdles and problems. The lack of sufficient technical training may impede players' capacity to acquire and excel in fundamental abilities and procedures that are crucial for achieving success at more advanced levels of competition (Smith et al., 2020). Insufficient tactical training might restrict players' ability to be versatile and adaptable in their strategies on the court (Jones & Zheng, 2018). Furthermore, deficiencies in mental skills training can hinder athletes' capacity to manage stress, sustain concentration, and surmount psychological obstacles (Mao et al., 2017). Inadequate exposure to competitive experiences can result in players being inadequately prepared for the demanding nature of professional tournaments and international competitions (Li & Guan, 2019).

Moreover, the lack of adequate coaching and guidance can restrict the potential for players' development, denying them individualized teaching, mentorship, and support (Wang & Zhou, 2018). The lack of attention given to the development of educational and life skills can have a negative impact on the overall growth of players, affecting their academic goals, career ambitions, and personal welfare (Chen et al., 2020). Finally, deficiencies in support networks can restrict players' ability to get resources, facilities, and opportunities for progress within the tennis community (Xu & Wu, 2019).

The importance of this study, titled "Serving Up Success: Assessing and Improving Tennis Athlete Development Pathways," becomes evident considering the problems and potential for development that have been identified. This research intends to analyze and assess the several factors that contribute to the growth of tennis athletes in China. The goal is to gain a deep understanding, identify areas that can be improved, and provide recommendations for progress. The significance of this study rests in its ability to provide valuable information for evidence-based strategies, policies, and interventions that can enhance the effectiveness and influence of the Chinese tennis athlete development program.

This study fills a significant gap in the current literature by providing a detailed analysis of the complex dynamics and intricacies involved in the growth routes of tennis athletes. Although some studies have examined specific aspects of athlete growth, such as technical proficiency or psychological

resilience, few have conducted a comprehensive evaluation that considers the wide range of elements that influence players' progress in the sport. This study provides new and valuable information by taking into account several aspects of athlete development. It addresses an important gap in the existing literature.

Overall, "Serving Up Success: Assessing and Improving Tennis Athlete Development Pathways" is a crucial and important effort to improve the efficiency, inclusiveness, and long-term viability of tennis athlete development programs in China. This research aims to analyze the obstacles, opportunities, and necessary improvements in the current Chinese tennis community in order to enhance its performance and success at an international level.

1.1. Statement of the Problem

This study aimed to assess and improve tennis athlete development pathways. Specifically, this study sought answers to the following questions:

(1) What is the profile of the respondents in terms of:

1)sex

2)academic program

3)years of experience

(2) What is the assessment of the tennis atheletes of the elements that contribute to their growth and success in terms of:

1)Technical Training

2)Tactical Training

3)Mental Skills Training

4)Competition Experience

5)Coaching and Guidance

6)Education and Life Skills

7)Support Network

(3) Is there a significant difference in the assessment of the tennis aesthetes of the elements that contribute to their growth and success when they are grouped according to profile?

(4) What are the key challenges and barriers faced by tennis athletes in their development pathways?

(5) How do coaches and trainers perceive the effectiveness of current development pathways in nurturing talent and maximizing player potential in tennis?

(6) What innovative training methods, coaching approaches, and technologies are being employed to enhance player development pathways in tennis?

(7) Based on the results of the study, what development pathway enhancement program can be designed to support tennis athletes?

Hypothesis

(1) There is no significant difference in the assessment of the tennis aesthetes of the elements that contribute to their growth and success when they are grouped according to profile?

1.2. Theoretical Framework

This study is anchored in Social Cognitive Theory (SCT), formulated by psychologist Albert Bandura throughout the 1960s and 1970s. This provides a comprehensive framework for comprehending human behavior, specifically in relation to learning, motivation, and behavior modification. Bandura's research on Social Cognitive Theory (SCT) was documented in his influential publication "Social Learning Theory" in 1977, establishing its importance in the fields of psychology and education.

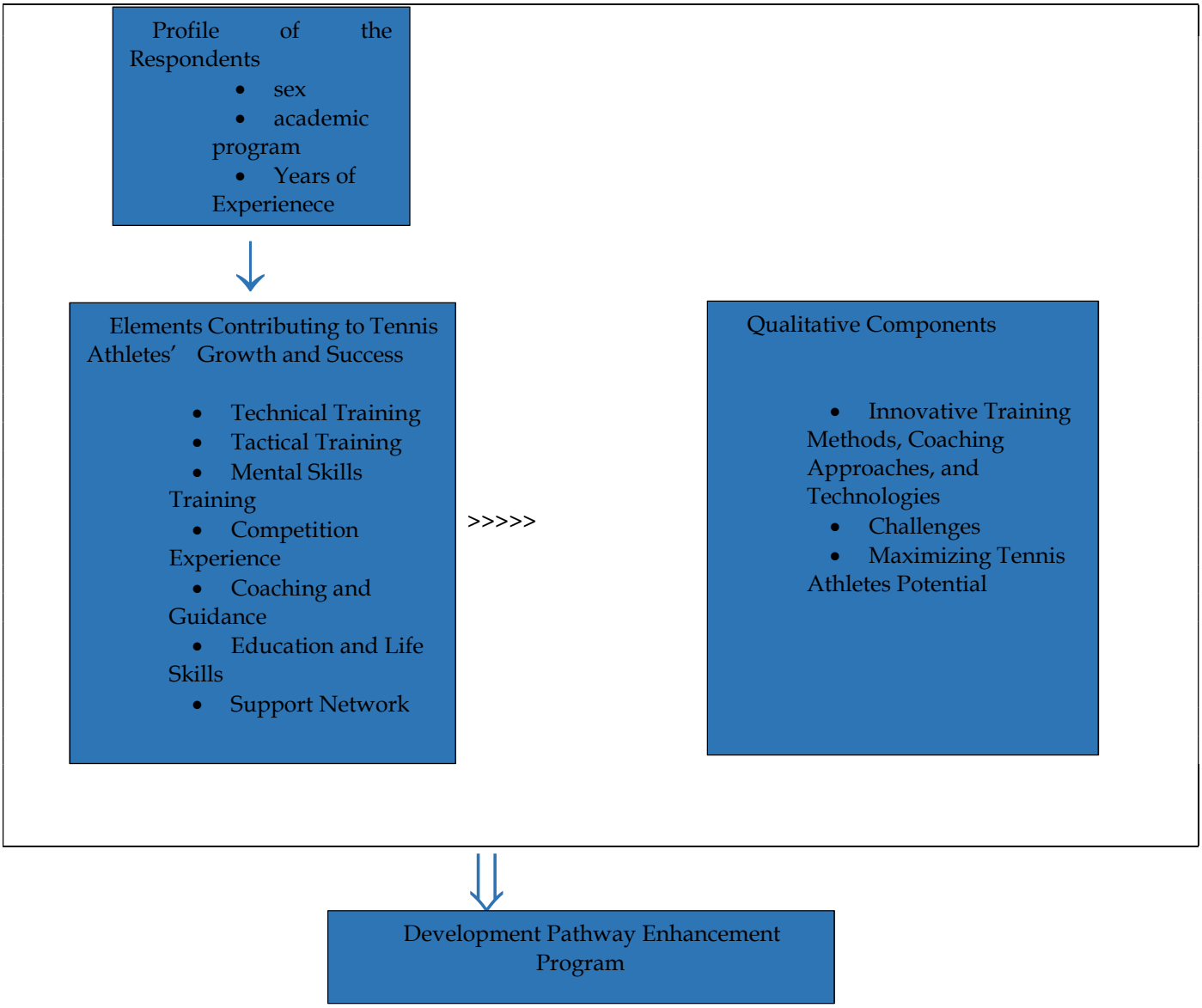
SCT focuses on the dynamic interplay among personal variables, environmental influences, and behavior. This viewpoint recognizes that individuals are not passive recipients of information but actively interact with their environment, acquiring knowledge through observation, imitation, and personal experience. The theory suggests that cognitive processes, such as attention, memory, and self-regulation, are essential in influencing behavior, in addition to social and environmental influences.

Observational learning is a fundamental idea in SCT. It proposes that individuals can learn new behaviors and abilities by seeing others and imitating their activities. This facet of self-control training (SCT) is especially pertinent in comprehending how coaching and supervision impact the developmental trajectories of tennis athletes. Coaches act as influential role models for athletes, showcasing correct tactics, strategies, and attitudes both during and outside of games. Athletes can acquire not only specific talents, but also wider concepts such as discipline, perseverance, and sportsmanship by observing and imitating their coaches.

Furthermore, SCT places significant importance on the influence of social reinforcement in molding behavior. Coaches offer criticism, commendation, and motivation to athletes, which can impact their self-efficacy beliefs and drive. Athletes' confidence in their talents is bolstered and their motivation to improve is fostered by positive reinforcement provided by coaches and peers. In contrast, negative feedback or insufficient support can weaken athletes' self-efficacy and motivation, impeding their advancement along the growth route.

The study titled "Serving Up Success: Assessing and Improving Tennis Athlete Development Pathways" highlights the significance of SCT in understanding the role of coaching and mentoring in the growth and success of athletes. By utilizing the principles of Social Cognitive Theory (SCT), the study aims to investigate the impact of coaching practices, feedback mechanisms, and mentor ship programs on athletes' beliefs, actions, and performance outcomes within tennis development pathways. Furthermore, SCT can provide valuable insights for creating coaching tactics that utilize social modeling, self-regulation, and environmental reinforcement to facilitate athletes' growth and improve their likelihood of achieving success in tennis. In summary, SCT provides a comprehensive structure for comprehending the intricate interplay among individual characteristics, societal influences, and environmental circumstances in the development of tennis athletes.

1.3. Research Paradigm



This study looked into the development paths of tennis players in great detail and tried to improve them. We were supposed to answer several important questions to develop better ways to help tennis athletes grow. At the start of the study, essential details about the subjects were carefully laid out, such as their gender, school program, and years of experience in the sport. The next part of the study examined how tennis players rated the most important things that led to their success and growth. These traits included various things, like technical training, practical knowledge, mental skill development, competition, teaching, and help, combining school with sports, and the strength of their support networks.

The study also determined if there were significant changes in how these critical factors were judged when the players were put into groups based on their profiles. Based on personal information, this division showed how people might have different experiences and ways of seeing things. Then, this information was used to make personalized plans for growth and improvement. The study also wanted to find and explain tennis players' main problems and challenges as they try to improve and grow. This study got information from teachers, players, and other important people, which gave a complete picture of the complicated problems that stopped growth.

In addition, it also delved into what coaches and trainers thought about how well present development paths were at finding talent and making tennis players better. This study led to important conclusions about the pros and cons of current methods, which helped shape future changes. The study also looked for new training methods, coaching techniques, and technological advances used to improve tennis players' growth paths. The study found possible ways for the sector to progress by looking closely at these cutting-edge strategies.

Based on the study's results, the researchers came up with an extraordinary method to help tennis players improve their development, to help them grow and succeed. This program was carefully made to deal with the problems listed, make the most of the good things about present paths, and include new ways to help athletes grow. The study's goal was to speed up good changes in tennis player growth, increasing the chances of success for people who want to become tennis players.

1.4. Significance of the Study

Tennis athletes will directly benefit from the insights obtained from this study. Athletes can optimize their training, address their weaknesses, and make strategic decisions regarding their development by comprehending the factors that contribute to their growth and success. Identifying challenges and barriers can assist athletes in navigating their careers with greater efficiency.

Coaches and trainers have a crucial impact on the growth and progress of tennis competitors. The results of this study can offer useful insights into the efficacy of existing coaching techniques and approaches. Coaches can utilize this information to enhance their methods, integrate cutting-edge strategies, and offer more focused coaching to their athletes.

Tennis academies and development programs, which are organizations dedicated to developing and nurturing tennis talent, can gain valuable knowledge from the findings of this study. By comprehending the advantages and limitations of their programs, these organizations may make well-informed choices regarding the allocation of resources, the design of the curriculum, and the improvement of the program in order to better cater to its athletes.

National and worldwide tennis federations, which are in charge of supervising the progress of tennis athletes in their specific areas, might utilize the results of this study to make informed policy choices and strategic endeavors. Federations can enhance the overall quality and effectiveness of their player development programs by tackling the mentioned issues and barriers.

Sports science and technology providers, who are pioneers in the field of sports science and technology, create tools and approaches to improve athlete performance. They can gain an advantage by comprehending the distinct requirements and preferences of tennis athletes. The study's findings on cutting-edge training techniques and technical progress can guide the creation of customized products and services for the tennis industry.

For educators and researchers in the domains of sports science, coaching, and athlete development, the results of this study can be utilized to enhance their understanding and guide future research efforts. The study has the potential to reveal fresh paths for investigation and enhance the overall comprehension of successful athlete development tactics.

Sponsors and investors who are interested in providing support to tennis athletes and development programs can obtain valuable insights into the difficulties and potential within the sport. The findings of the study could assist them in identifying prospective investment and cooperation opportunities to foster the growth and achievement of tennis athletes.

1.5. Scope and Limitations

By looking into a set of research questions that wanted to learn more about different parts of athlete growth, this study looked at and tried to improve the ways tennis players can improve. The study mainly looked at the participants' gender, school program, and number of years of work, giving a demographic picture of the people who answered. There was also an investigation into how players thought about what helped them grow and succeed. These factors included learning technical, practical, and mental skills, competing and getting experience, getting coaching and advice, combining school with sports, and having support networks. The study also examined whether these ratings might differ when players were put into groups based on their profiles. It also found out what problems and issues tennis players, teachers, and other people thought were the biggest ones they faced as they tried to get better. The study also looked at what coaches and trainers thought about how well current development paths worked and how new training methods, teaching strategies, and technology were being used to help tennis players improve. Based on what was found, the study showed how to improve the growth route for tennis players.

Even though this study had a lot of goals, it did have some problems that were fixed. The study was only about looking at and improving the ways that tennis players can improve their skills. But it didn't look at everything that might affect how athletes grow in the sport. The study's sample size was also limited because it only looked at five schools. This means the results might not have applied to a larger group of tennis players. Also, using self-reporting and subjective readings in surveys and interviews conducted by the researcher may have led to biases or limits in the collected data. Additionally, the mixed methods approach helped understand the study's goals, but it might have needed to be easier to combine and analyze numeric and qualitative data correctly. Lastly, the study's ideas for improving a development route program might not have worked because of fundamental issues, a lack of resources, or factors unique to specific tennis programs and schools.

1.6. Definition of Terms

Coaching and guidance refer to the structured education, mentorship, and assistance given to tennis athletes by certified coaches, trainers, and mentors. This encompasses various aspects of coaching such as technical and tactical guidance, constructive comments, creating goals, analyzing performance, and providing guidance on physical fitness, mental readiness, and overall athlete growth.

Competition experience refers to the involvement of tennis athletes in structured tournaments, matches, and competitive events at different levels, such as local, regional, national, and international competitions. It also includes their performance and results in these competitions.

Instruction and Life Skills encompass the combination of academic instruction and personal growth, in addition to tennis training. This encompasses educational initiatives, one-on-one instruction, and avenues for scholastic progress, in addition to life skills development encompassing time management, effective communication, collaborative work, leadership, and individual accountability.

Mental skills training involves implementing strategies and activities to improve psychological elements of performance, including concentration, focus, confidence, motivation, resilience, visualization, goal-setting, and the ability to handle stress and emotions during competitive situations.

Support Network is comprised of people and resources that are accessible to tennis athletes in order to offer aid, motivation, and direction as they progress in their development. This include individuals such as family members, friends, teammates, coaches, trainers, sports psychologists, academic advisers, and other stakeholders who provide players with emotional, financial, and logistical assistance.

Tactical training in tennis focuses on the strategic elements of games, such as choosing the right shots, positioning oneself on the court, establishing patterns of play, devising game plans, and adjusting strategies according to the strengths and

weaknesses of opponents.

Technical training refers to organized teaching sessions that aim to enhance fundamental abilities and methods that are specific to tennis. These include grip, footwork, strokes (forehand, backhand, serve), volleys, and overheads.

Tennis athletes are individuals who actively participate in tennis as a sport. This includes both amateur and professional players who engage in organized tennis contests and training programs.

Tennis athletes Development Pathways refer to the organized routes and experiences that individuals go through as they advance in their tennis careers. These pathways generally consist of a blend of training, competition, coaching, education, and support with the goal of fostering talent, improving abilities, and attaining success in tennis.

2. Methodology

This section delineates the methodical and meticulous technique employed by researchers to strategic, implement, and assess a study. The term "encompasses" refers to the inclusion of several components, such as the research design, which outlines the overall structure and framework of the study. Data collection strategies clarify the approach by which information is obtained from participants or relevant sources. Data analysis methods involve the systematic modification, interpretation, and integration of collected data to derive important and valuable insights.

2.1. Research Design

This study used a mixed-methods technique, combining qualitative and quantitative methods to fully explore the research questions and better understand how tennis players develop. This method used surveys or questions to get quantitative information on how players felt about things that helped them grow, like technical and tactical training, competition experience, teaching and advice, and support networks. In addition, semi-structured interviews with teachers, players, and partners were used to collect qualitative data. The researchers were able to learn more about the participants' thoughts, experiences, and problems regarding the growth of tennis players through these conversations.

The method for getting data involved sending out surveys to get numerical information about the players' demographics, years of experience, and assessments of various developmental factors. At the same time, interviews were used to collect qualitative data that showed the complex aspects of athletes' feelings and thoughts. Different methods were used to look at both types of data. Statistical methods were used to find trends and relationships in the quantitative data, and thematic analysis was used to find important themes and insights in the qualitative data.

The results of looking at numeric and personal data were combined to give a complete picture of how tennis players can improve. The process of integration involved looking at and comparing the results from both data sources to see if they agreed or disagreed with each other. Then, the results were added together to come to a complete set of conclusions and insights. The study tried to make the results more accurate and reliable by looking at data from various sources. This helped me understand the study topic very well.

The mixed-methods research method worked well for this study because it allowed us to examine how tennis players grow from different perspectives. By using both quantitative and qualitative data, the study showed both regular trends and more complex events, giving researchers a full picture of the factors that affected tennis player growth.

2.2. Sampling Method

A sampling method that mixed purposeful and stratified sampling was used in this study to look into how tennis players grow. This method was meant to include a lot of different views and experiences of the tennis community, ensuring everyone was heard. Purposive sampling was used to find people to take part in this study. They were picked because they were involved in tennis training and competition. This included athletes, teachers, and other stakeholders who had helpful information about how players progress. The coaches, trainers, and managers were picked based on how well they knew how to run programs that help athletes improve. With stratified sampling, essential demographics like age, gender, skill level, and place were considered for each group of subjects, which led to a better portrayal. This ensured that the sample had a lot of different points of view. It also picked tennis players based on their participation in various school programs, like college tennis or junior development camps. The sample number for each group was found by using the ideas of data saturation and adequacy to make sure that everyone knew everything there was to know about the study problems. As part of the hiring process, tennis clubs, schools, federations, and online sites were contacted. All subjects gave informed consent to ensure they acted ethically during the study. This mixed sample method was used to improve the validity and generalizability of the study's results. It also gave researchers helpful information about how tennis players grow.

2.3. Instrumentation

The instrumentation utilized in this study on tennis player development paths consists of a custom-made questionnaire and an interview technique. These instruments were carefully built to collect quantitative and qualitative data, respectively. The questionnaire is designed to gather athletes' evaluations of different factors that are essential for their development and achievement in tennis. These factors include technical and tactical training, mental skills improvement, competition experience, coaching effectiveness, educational integration, and dynamics of the support network. The survey includes Likert-scale response alternatives for each issue, as well as demographic questions to provide further context. On the other hand, the interview protocol comprises of semi-structured questions designed to extract detailed qualitative insights from athletes, coaches, and stakeholders. Open-ended questions promote in-depth answers about difficulties, the efficacy of existing approaches, novel techniques, and the dynamics of support networks. Before being implemented, both instruments will undergo thorough validation procedures, including expert evaluation to confirm the accuracy and relevance of the material. Input from specialists will be used to make improvements that will increase the clarity and relevance. Afterwards, a pilot test will be carried out using a small sample to evaluate the reliability and accuracy of the equipment. We will seek participant comments in order to further enhance the instruments. By following this careful and detailed method, the instruments will be fine-tuned to accurately measure the research goals, resulting in strong and enlightening data on the paths of tennis athlete development.

Reliability Test Results

The Shapiro-Wilk test, a statistical method specifically formulated to evaluate normality, was be employed to establish the suitability of the parametric test for the research goals. Parametric testing is employed when the p-value exceeds 0.05. When the p-values are below 0.05, it raises questions regarding the data's adherence to a uniform distribution. Consequently, non-parametric testing was employed.

The research inquiries addressed in this paper were revisited. Consequently, the results are presented together with their justifications and evaluations.

Preliminary Analysis

Reliability

Table A. Reliability Measurement – Assessment of the Elements that Contribute to the Growth and Success (Cronbach's Alpha)

Construct	Cronbach's Alpha	No. of Item/s Deleted	No. of Item/s Retained
Technical Training	0.86	0	10
Tactical Training	0.92	0	10
Mental Skills Training	0.91	0	10
Competition Experience	0.92	0	10
Coaching and Guidance	0.95	0	10
Education and Life Skills	0.92	0	10
Support Network	0.94	0	10

Table B. Normality Test (Shapiro-Wilk)

	W	p
Elements that Contribute to the Growth and Success	0.98	0.096

Note. A low p-value suggests a violation of the assumption of normality

Homogeneity of Variances Test (Levene's)

	F	df	df2	p
Elements that Contribute to the Growth and Success	1.56	1	524	0.212

Note. A low p-value suggests a violation of the assumption of equal variances

Table A outlines the reliability of the scale in evaluating the factors that contribute to tennis athletes' development and success. These factors include technical training, tactical training, mental skills training, competitive experience, coaching and guidance, education and life skills, and support networks. Cronbach's alpha (CA) was employed to assess internal consistency assessments. Nunnally (1978) and Fornell and Larker (1981) state that a coefficient alpha (CA) value of 0.70 or higher implies high-quality items as well as internal consistency. The estimated coefficient alpha (CA) values vary from 0.86 to 0.95, signifying that all items demonstrate good quality and display substantial internal consistency.

The computed p-values from the Shapiro-Wilk test and Levene's test, which are higher than 0.05, indicate that the scores are regularly distributed and have achieved homogeneity. Hence, to determine if there was a significant difference in the assessment of the elements that contribute to the growth and success of the tennis athletes, parametric tests such as independent sample t-test and analysis of variance were utilized.

2.4. Data Gathering Procedures

For this study on tennis player growth routes, the data collection methods were carefully planned to ensure that complete and valuable data was gathered. Tennis players, teachers, and other interested parties were asked to participate through various methods, such as tennis clubs, academies, federations, and online sites. There was an effort to get a wide range of tennis fans involved, ensuring that people of all skill levels and places in the sport were represented. People had to give full permission, which meant they understood the study's goals and methods before they could take part.

After signing up, students participated in two main ways of getting information: they filled out a customized questionnaire and were interviewed in a semi-structured way. Physical and electronic copies of the poll were made available so that numbers could be collected about how the athletes felt about the different factors that helped them improve. Along with the questionnaire, detailed instructions were given to make it easier for people to fill it out independently and ensure that their answers were correct.

Along with the assessment, a group of subjects, which included players, trainers, and other important people, also went through semi-structured interviews. The interviews gave a chance to learn about the experiences, opinions, and problems that the subjects had with the growth of tennis players. People were interviewed in person, over the phone, or through videoconferencing. They followed a set of questions meant to get specific qualitative views. The conversations encouraged open communication, which let the people who took part talk about their experiences naturally.

During the data collection process, strict steps were taken to protect the users' privacy and data accuracy. The data were saved safely and anonymously to protect the participants' privacy. Only authorized members of the study team could view them. Strict quality control measures were put in place to closely monitor the progress and ensure that the study plan was strictly followed. Keeping in touch with each other as a team also made it easier to solve any problems or address any issues during the data collection process.

It was carefully analyzed after all the data was collected—both the quantitative data from the surveys and the qualitative data from the interviews. Statistical methods were used to look at the questionnaire results, and thematic methods were used to look at the interview recordings to find essential themes. The results from both data sets were put together to get a complete picture of the tracks tennis players take to

improve. This answered the project's study questions and met its goals. Using thorough data collection methods, this study came up with meaningful conclusions that were then used to suggest better ways to help tennis athletes grow.

2.5. Statistical Treatment

Descriptive Statistics

Descriptive Statistics: Descriptive statistics were used to summarize and describe the quantitative data obtained from the self-designed questionnaire. The calculations of mean, median, mode, standard deviation, and range were used to obtain a comprehensive understanding of how athletes evaluated different factors that contributed to their development routes. Descriptive statistics were employed to summarize demographic characteristics, including age, years of experience, and academic program.

Inferential Statistics

Statistical inference was employed to examine links, disparities, and connections within the quantitative data. More precisely, correlation analysis was used to investigate the connections between various aspects of athlete development pathways, such as technical training and competition experience. Moreover, inferential tests such as t-tests or analysis of variance (ANOVA) were employed to evaluate disparities in athletes' evaluations based on demographic factors such as gender, academic program, or years of experience.

Synthesis of Results

The integration of quantitative and qualitative studies yielded a full comprehension of the routes for the growth of tennis athletes. By triangulating data from many sources and employing diverse approaches, a comprehensive and detailed examination of the research issues was achieved. Integration entailed the comparison of quantitative survey results with qualitative interview insights to confirm findings, detect inconsistencies, or offer other views on the research topic.

Validity and Reliability

Evaluations of validity and reliability were conducted to ensure the strength and accuracy of the study's findings. The content validity of the self-created questionnaire was established by conducting an expert review. This evaluation ensured that the questionnaire items accurately measured the targeted constructs. Reliability analysis, such as the utilization of Cronbach's alpha, was performed to evaluate the internal consistency of items in a questionnaire. In addition, inter-rater reliability was assessed to guarantee consistency in the coding of qualitative data for thematic analysis.

Qualitative Analysis

Transcription: The initial stage of qualitative analysis entailed transcribing the recorded interviews word for word. The transcription of each interview was conducted with precision and thoroughness, encompassing all spoken exchanges, pauses, and non-verbal signals. Transcription was carried out either manually or with the assistance of transcription software, guaranteeing accuracy and faithfulness to the original interviews.

Familiarization

Researchers familiarized themselves with the interview data through the process of studying the transcripts repeatedly. This procedure enabled researchers to fully engage with the material, acquiring a comprehensive grasp of the participants' viewpoints, encounters, and revelations. During this stage, initial impressions and emerging themes were observed and identified.

Programming

An organized coding procedure was utilized to discover recurring patterns, themes, and categories in the interview data. The researchers used descriptive and interpretive codes to analyze parts of text, emphasizing significant concepts, ideas, and repeating themes. Both inductive and deductive coding methodologies were employed, providing flexibility and depth in analysis.

Theme Development

The codes were systematically categorized and grouped together to create comprehensive themes and sub-themes that captured the fundamental nature of the data. Themes represented patterns of meaning and significance that arose from the narratives of the participants. The researchers continuously improved and modified the themes by engaging in conversations and making comparisons within the study team.

Data Display

After identifying and developing themes, researchers had the option to graphically organize the data using matrices, charts, or diagrams. Data visualization tools aided in illustrating the connections between codes, themes, and participants, promoting a more profound comprehension of qualitative data and improving transparency in analysis.

Data Analysis

The qualitative data were analyzed by researchers in relation to the research objectives and existing literature. The interpretation phase entailed combining the themes and investigating their consequences for comprehending the routes of tennis athlete development. The researchers engaged in a thorough analysis of the data, carefully examining the conveyed meanings and exploring alternate interpretations and theoretical frameworks.

Member Checking

In order to improve the accuracy and trustworthiness of the qualitative findings, member checking was carried out. Participants were given the chance to examine and confirm the developing patterns and explanations, guaranteeing that their viewpoints were faithfully portrayed in the study. Input from participants was used to make improvements to the topics or gain further understanding.

Reporting

The ultimate stage of qualitative analysis entailed presenting the results in a lucid, cohesive, and persuasive manner. The researchers composed an elaborate account that delineated the discovered themes, substantiated by illustrative statements and snippets extracted from the interviews. The study offered comprehensive and intricate insights into the growth routes of tennis athletes, hence enhancing the overall comprehension of the research topic.

2.6. Ethical Considerations

Conflict of Interest

The researcher asserted impartiality and the absence of personal or professional affiliations that could have influenced the outcomes of the study on tennis athlete development pathways. The objective was to conduct an unbiased evaluation of the factors impacting tennis athlete development, maintaining transparency and integrity throughout the research process.

Privacy and Confidentiality

Participants' privacy was rigorously protected, with all information treated confidentially. Responses were anonymized, and data were securely stored to prevent

unauthorized access, ensuring the confidentiality of participants' information throughout the study.

Informed Consent Process

Participation in the study was entirely voluntary, and participants received comprehensive information about the study's objectives, procedures, potential risks, and benefits. They were given ample opportunity to ask questions and provide informed consent freely, without coercion or pressure, respecting their autonomy and rights as research participants.

Vulnerability and Possible Risk

Efforts were made to minimize any risks associated with participation, prioritizing participant well-being. Precautions were taken to ensure participants' comfort and safety throughout the study, particularly during physical activities such as tennis training or interviews.

Recruitment

Transparent and inclusive recruitment methods were employed to ensure equitable access to participation opportunities for all eligible individuals. Attempts were made to recruit participants from diverse backgrounds to ensure representation across various demographics, promoting inclusivity and diversity within the research sample.

Assent

As the study involved adult participants, assent procedures were not applicable.

Benefits and Compensation

While participation offered insights into tennis athlete development pathways and contributed to advancing knowledge in the field, any compensation or incentives provided were reasonable and commensurate with participants' contributions to the study, ensuring fairness and transparency in research practices.

Incentives and Reimbursements

Participants incurring expenses related to their involvement in the study, such as travel costs or materials, were reimbursed as necessary to alleviate any financial burden and ensure equitable access to participation, fostering fairness and accessibility in research participation.

Community Participation

Efforts were made to involve the tennis community in the research process, fostering collaboration and engagement. Findings were shared with relevant stakeholders and disseminated through appropriate channels to benefit the broader tennis community and promote positive impact and change.

3. Results, Analysis, and Interpretation

This chapter presents the data in an organized tabular format and provides a comprehensive explanation and analysis of the information. The conclusions in this section derive from a statistical study conducted with Jamovi 2.3.28.

Research Question 1: What is the profile of the respondents in terms of:

Table 1 presents the frequency and percentages of demographic data for a specific cohort of tennis athletes, encompassing their assigned academic programs and years of experience. The tabulated figures reveal that 69% of the participants were female and 31% were male, signifying that the bulk of respondents are female athletes.

Nine percent enrolled in degrees in arts and design, six percent in business and management, seven percent in education, engineering and technology, and health sciences, and sixty-five percent in humanities and social sciences. The data analysis indicated that the predominant majority of respondents are majoring in humanities and sciences.

Table 1. Frequencies and Percentage of Demographic Factors

Sex	Counts	% of Total
Female	364	69 %
Male	162	31 %
Academic Program		
Arts and Design	45	9 %
Business and Management	29	6 %
Education	38	7 %
Engineering and Technology	36	7 %
Health Sciences	36	7 %
Humanities and Social Sciences	342	65 %
Years of Experience		
1-2 years	208	40 %
3-5 years	74	14 %
6 or more	91	17 %
less than one year	153	29 %

In terms of years of experience, 40% had 1 to 2 years, 14% had 3 to 5 years, 17% had more than 6 years, and 29% had less than 1 year of experience. This indicates that the majority of tennis athletes have 1 to 2 years of experience.

Assessment of the Tennis Athletes of the Elements That Contribute to their Growth and Success

Table 2 presents an evaluation of the factors that facilitate the development and achievement of tennis athletes in terms of technical training. The aggregated data indicate a composite mean score of 3.33 with a standard deviation of 0.38, signifying an average rating. This indicates their consensus that they receive sufficient feedback and guidance from coaches during technical training (M = 3.40), that the sessions are thoroughly organized and implemented with a coherent framework (M = 3.38), and that participation in technical instruction improves their shot consistency (M = 3.38). According to their feedback, item number 6 achieved the highest average score of 3.40, but item number 1 (the technical training sessions I participate in considerably boost my tennis talents) garnered the lowest average score of 3.24.

The results show that tennis players usually think the basic training they get is helpful, but some things could be done better. A mean score of 3.33 with a standard deviation of 0.38 shows that the grade is about average for all factors. Athletes mostly agreed that their coaches gave them enough feedback and direction during technical training (M = 3.40), and they liked how the lessons were organized in a way that made sense (M = 3.38), which made their shot accuracy better (M = 3.38).

Table 2. Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes in terms of Technical Training

Indicators	Mean	SD	Verbal Interpretation	Rank
1. The technical training sessions I participate in significantly enhance my tennis abilities.	3.24	0.81	Manifested	10
2. I am quite self-assured in my capacity to proficiently perform a wide range of tennis strokes that I have acquired via rigorous technical instruction.	3.35	0.73	Manifested	5
3. The technical training sessions effectively target and improve the areas of weakness in my game.	3.34	0.79	Manifested	6
4. The drills and exercises in technical training are demanding yet advantageous.	3.33	0.71	Manifested	7
5. The technical training sessions are meticulously planned and executed with a clear and logical framework.	3.38	0.73	Manifested	3
6. I am adequately provided with comments and direction from coaches during technical training.	3.40	0.70	Manifested	1
7. Engaging in technical instruction enhances my ability to achieve consistency in my shots.	3.38	0.66	Manifested	3
8. Technical training has played a substantial role in enhancing my overall performance as a tennis player.	3.26	0.78	Manifested	9
9. I am well-equipped with technical training to excel in competitive matches.	3.27	0.80	Manifested	8
10. I am very driven to consistently attend and actively engage in technical training courses.	3.38	0.67	Manifested	3
COMPOSITE MEAN	**3.33**	**0.38**	**Manifested**	

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

"Sufficient feedback and guidance from coaches during technical training" (M = 3.40) got the most votes, which shows how important good teaching is for athletic growth. Kramer's (2020) study on feedback in sports says that structured feedback loops between teachers and players are critical for better performance. Thanks to their coaches ' advice, athletes learn faster when they know their strengths and flaws. This shows that tennis programs that stress regular, helpful comments can help athletes improve, leading to better success and more motivation.

"The technical training sessions I participate in considerably boost my tennis talents" (M = 3.24) was the least-rated item, which suggests that there may be a difference in how practical the training is. Even though most athletes have good things to say about coaching and session planning, they don't think these lessons help them improve their skills. Kjølberg et al. (2021) say that this feeling might come from the fact that individualized training methods aren't always practical. They say that one-size-fits-all teaching methods don't always meet the needs of each player, which means that their full potential isn't being used. So, making training plans specific to each person might lead to more happiness and better results.

These results suggest that even though feedback systems work well, more needs to be done to ensure that technical training leads to significant improvements in ability. More studies, like Carter et al. (2022), show how important it is to ensure athletes' training plans are tailored to their needs, especially in sports that require a lot of skill, like tennis. Improving personalized training and focusing on each athlete's skill growth could help close the gap between what athletes expect from training and what they get from it.

In conclusion, the data show that technical training needs to be improved by keeping what works well for coaching and lesson planning while listening to what the players want: more significant skill development. Tennis schools can help athletes grow faster and make sure that technical sessions lead to big improvements in ability by using more individualized training plans.

Table 3 summarizes the evaluation of the factors that influence the growth and success of tennis athletes in tactical training. The composite mean score is 3.37, indicating an average rating, supported by a standard deviation of 0.40. The data shows that most people agree that tactical training sessions help people understand the strategic parts of tennis matches (M = 3.41), that these sessions can be tailored to different playing styles and skill levels (M = 3.40), and that they are intellectually stimulating and engaging (M = 3.39). Based on their responses, item number 1 achieved the highest average score of 3.41, but item number 7 (I am confident that partaking in tactical training has considerably increased my overall performance during matches) obtained the lowest average score of 3.32.

This indicates that most people think it helps tennis players improve. "Tactical training sessions help people understand the strategic parts of tennis matches" (M = 3.41) got the most votes, which shows that athletes value the role that tactical training plays in helping them understand match strategy. This fits with new research by Gupta and Alvarez (2022), who talk about how vital tactical intelligence is in sports like tennis, where players must make quick strategy choices. Athletes who know about match tactics can predict and respond well to their opponents, giving them a winning edge. The players know how critical tactical lessons are for improving this vital part of their game because they got a high score in this area.

Another critical factor is "sessions being tailored to different playing styles and skill levels" (M = 3.40), showing players that tactical training plans are flexible and can fit their needs. This is supported by Eriksson et al. (2021), who discovered that athletes can understand and use tactical ideas

when their training plans are tailored to their specific playing styles. Sportspeople do better when they get training that fits their particular skills and game styles. This is because they can focus on improving their strengths and fixing their flaws. The high score here shows that the adaptability of tactical training is seen as an essential quality that enhances performance and learning.

Table 3. Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes in terms of Tactical Training

Indicators	Mean	SD	Verbal Interpretation	Rank
1. Engaging in tactical training sessions enhances my comprehension of the strategic elements involved in tennis matches.	3.41	0.71	Manifested	1
2. I can proficiently implement tactical concepts acquired during training into my match strategy.	3.36	0.74	Manifested	8
3. Tactical training programs offer occasions for practicing game scenarios and strategy.	3.36	0.71	Manifested	8
4. My participation in tactical training has enhanced my decision-making skills on the court, resulting in increased confidence.	3.37	0.72	Manifested	6
5. Engaging in tactical training improves my capacity to analyze and predict my adversary's actions.	3.36	0.67	Manifested	8
6. Coaches deliver concise and efficient guidance throughout tactical training sessions.	3.38	0.67	Manifested	5
7. I am convinced that engaging in tactical training has significantly enhanced my overall performance during matches.	3.32	0.77	Manifested	10
8. The tactical training sessions are customized to accommodate various playing styles and skill levels.	3.40	0.65	Manifested	2
9. I derive intellectual stimulation and engagement from tactical training sessions.	3.39	0.63	Manifested	3.5
10. Engaging in tactical training sessions has facilitated the cultivation of a more strategic mindset in my approach to my matches.	3.39	0.66	Manifested	3.5
COMPOSITE MEAN	**3.37**	**0.40**	**Manifested**	

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

Even though these thoughts are positive, the item with the lowest score (M = 3.32)—"I am confident that participating in tactical training has considerably improved my overall performance during matches"—shows that athletes clearly understand strategy but can't use it in competitive matches. Doyle and Parker (2023) say that this gap between what you learn in school and what you can do with it is a common problem in sports. Athletes may understand theory methods, but they may find it hard to use them when they're in a real game. This result shows that tactical training is mentally challenging and strategic, but it might not be enough, as in real matches' high-pressure, real-time demands. This could make people think that tactical training isn't improving performance.

These results have important implications for how future training plans are made. Williams and Jackson (2023) say that more match-like models should be used in tactical training to close the gap between knowing tactics and doing well in matches. These simulations, like real games, can help players better make intelligent decisions in settings like real games. In this way, players can build "muscle memory" for tactical choices, making it easier to use their plans when they're under a lot of stress. Additionally, Carter et al. (2023) say that using post-match video analysis in training can help athletes see how they did tactically and get specific comments on improving. This method allows players to see where they could have made different tactical choices and shows them where they need to improve, connecting what they know with what they do.

The fact that players need to figure out how well tactical training works to improve their game performance says that they understand its intellectual and strategic value but think it could be better used in real life. A more hands-on method, with real-time decision-making drills and match simulations, could make it much easier to apply what you've learned about tactics to real-game success. Also, teachers should improve feedback systems so players understand how to make better tactical decisions during games. For example, they could use real-time feedback during training sessions or technology to analyze performance.

The end result of this study shows that tactical training is liked for teaching strategy and flexibility, but more needs to be done to ensure that it leads to better match performance. Coaches can help athletes bridge the gap between what they know in theory and what they can do in practice by using game simulations and video analysis. This can help athletes feel more confident and succeed in professional tennis.

Table 4 presents an evaluation of the factors that facilitate the development and achievement of tennis athletes in terms of mental skill training. The research revealed a composite mean score of 3.41 and a standard deviation of 0.38, signifying an average evaluation. This indicates their consensus that incorporating mental skills training into their regimen has led to improvements in their ability to recover swiftly from setbacks (M = 3.47), that participation in mental skills training has bolstered their capacity to sustain attention and concentration during matches (M = 3.45), and that they place a high value on and gain substantial advantages from mental skills training sessions, which significantly enhance their overall performance (M = 3.44). Analysis of the responses revealed that item number 7 attained the highest average score of 3.47, whereas item number 2 (Participating in mental skills training has enhanced my mental resilience and capacity to effectively manage high-pressure circumstances) received the lowest average score of 3.31.

Table 4. Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes in terms of Mental Skill Training

Indicators	Mean	SD	Verbal Interpretation	Rank
1. Engaging in mental skills training has facilitated the enhancement of my ability to maintain attention and concentration throughout matches.	3.45	0.65	Manifested	2
2. Participating in mental skills training has enhanced my mental resilience and capacity to effectively manage high-pressure circumstances.	3.31	0.77	Manifested	10
3. Mental skills training offers effective strategies for effectively controlling pre-match anxieties and anxiety.	3.42	0.67	Manifested	4.5
4. I am convinced that engaging in mental skills training has had a beneficial effect on my general confidence when playing on the court.	3.39	0.67	Manifested	8
5. Through the utilization of mental skills training, I am capable of sustaining a constructive mindset and attitude amidst demanding matches.	3.41	0.66	Manifested	6.5
6. Coaches adeptly instruct and enforce mental skills techniques during training sessions.	3.42	0.61	Manifested	4.5
7. Since integrating mental skills training into my routine, I have observed enhancements in my capacity to recover quickly from setbacks.	3.47	0.62	Manifested	1
8. Engaging in mental skills training has enabled me to cultivate effective techniques for sustaining concentration and poise throughout extended matches.	3.38	0.72	Manifested	9
9. I highly value and derive significant benefits from mental skills training sessions, which greatly enhance my entire performance.	3.44	0.61	Manifested	3
10. Engaging in mental skills training has enhanced my mental preparedness and resilience.	3.41	0.62	Manifested	6.5
COMPOSITE MEAN	**3.41**	**0.38**	**Manifested**	

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

The results show that most people had a good but average view of the effects of mental skills training. The most-rated item, "Adding mental skills training to their routine has made it easier for them to bounce back quickly from setbacks" (M = 3.47), shows that players put a lot of value on their ability to deal with problems during games. This result fits a new study by Anderson and Wright (2021), who stress how important mental recovery is in high-performance sports. Mental toughness helps players stay focused and get back on track after making a mistake, which is very important for success in competitive settings, especially in tennis, where matches are often unpredictable and mentally demanding.

The fact that "sustaining attention and concentration during matches" got such a high score (M = 3.45) also shows that players think mental skills training is a crucial way to stay focused during a game. Concentration is key to success in sports like tennis, where players have to constantly process new information, guess their opponent's moves, and change their plans in real-time. Studies like the ones by Harper and Stone (2022) show that training mental skills to improve focus and attention improves players' cognitive endurance, which lets them keep up a high level of performance for longer amounts of time.

However, the item with the lowest score (M = 3.31)—"participating in mental skills training has enhanced my mental resilience and capacity to handle high-pressure situations effectively"—indicates that athletes are less sure of their ability to handle pressure through mental training. This lower number could mean that even though training in cognitive skills helps athletes get over setbacks and focus better, it may not fully help them deal with stress and worry in high-stakes scenarios. Kelly and Donovan (2023) say that dealing with stress is one of the most complex parts of mental skills training because athletes need to learn not only how to focus but also how to control their emotions by using breathing exercises and visualizing images to keep their cool.

The implications of these results are significant for making mental skills training programs work better. The high results in focus and resilience show that the programs in place are doing an excellent job of dealing with these issues. The lower number for "managing high-pressure situations," on the other hand, shows that more training is needed to include methods specifically for dealing with stressful situations. Coaches could add more pressure modeling exercises to mental skills training. In these exercises, athletes are put in high-stress match situations and taught how to control their feelings and actions in real-time. Harris et al. (2023) found that athletes who practiced in high-pressure models did better in actual high-stakes events. This shows that these kinds of drills can help athletes do better when they are stressed.

Also, the fact that players aren't very sure of their ability to deal with stress shows that mental training needs to be more customized. Barker and Chapman (2022) say that players handle stress in various ways, and a standard method of teaching cognitive skills might not correctly meet the needs of each person. Making mental skills programs fit the specific psychological needs of each player could lead to more significant gains in resilience and stress control.

In conclusion, tennis players think that improving their mental skills is helpful, especially when focusing and recovering their minds. However the results also show room for change in how we deal with the problems players face when they are under a lot of stress. Coaches can make mental skills programs more effective by adding pressure simulations and individualized mental training methods. This will help players do better generally in high-stakes situations.

Table 5. Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes in terms of Coaching and Guidance

Indicators	Mean	SD	Verbal Interpretation	Rank
1. I am provided with constructive comments and instruction from coaches, which assists me in enhancing my performance in the game.	3.41	0.70	Manifested	8
2. Coaches adeptly convey technical and tactical principles during training sessions.	3.44	0.68	Manifested	3.5
3. I receive ample help and motivation from my instructors to establish and accomplish my tennis objectives.	3.44	0.66	Manifested	3.5
4. The coaches have a sincere interest in my growth as both a player and an individual.	3.40	0.69	Manifested	9.5
5. I have confidence in the knowledge of my instructors and depend on their assistance to further my skills in tennis.	3.44	0.67	Manifested	3.5
6. Coaches offer customized guidance and adjust training programs to meet specific requirements.	3.40	0.69	Manifested	9.5
7. I am at ease when it comes to addressing my coaches with any inquiries or apprehensions I may have.	3.42	0.65	Manifested	7
8. Coaches cultivate a constructive and encouraging team atmosphere during training sessions.	3.44	0.64	Manifested	3.5
9. I am convinced that receiving coaching and assistance is essential for my development and achievement as a tennis player.	3.44	0.62	Manifested	3.5
10. I highly value the unwavering focus and steadfast commitment of my coaches in fostering my growth and progress as an athlete.	3.44	0.62	Manifested	3.5
COMPOSITE MEAN	**3.43**	**0.37**	**Manifested**	

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

Table 5 presents an evaluation of the factors that facilitate the development and achievement of tennis athletes in relation to coaching and mentorship. The research revealed a composite mean score of 3.43 and a standard deviation of 0.37, signifying an average evaluation. This indicates their consensus that coaches effectively communicate technical and tactical principles during training sessions (M = 3.44), that they receive sufficient support and motivation from their instructors to set and achieve their tennis goals (M = 3.44), and that they possess confidence in their instructors' expertise and rely on their guidance to enhance their tennis skills (M = 3.44). Based on their responses, items 2, 3, 5, 8, 9, and 10 achieved the highest mean score of 3.44, whereas items 4 (The coaches have a sincere interest in my growth as both a player and an individual) and 6 (Coaches offer customized guidance and adjust training programs to meet specific requirements) received the lowest mean score of 3.40.

The results show that teaching and mentoring play a big part in the growth and success of tennis players, with a mean score of 3.43 and a standard deviation of 0.37. This average grade shows how happy athletes are with their teachers' general ability to communicate well and offer support. "They receive enough support and motivation to reach their goals," "They have faith in their instructors' expertise," and "coaches effectively communicate technical and tactical principles during training sessions" are the things with the highest ratings (all scored at M = 3.44). It's clear from these high scores that players value their teachers' ability to help them learn the technical and tactical parts of the game and keep them motivated.

Recent studies, like Blake and Johnson (2023), have stressed how important it is for coaches to communicate clearly and effectively. This high-ranking for-communication fits with this idea. Their research shows that players who get clear and helpful feedback from their teachers tend to improve their skills and feel better about their self-confidence. This means that the coaches in the program being reviewed are good at giving players important technical and tactical advice that helps them turn their training into good game performance.

Athletes also gave teachers high marks for support and inspiration (M = 3.44), which shows how important emotional and mental support is in sports mentoring. Edwards and Simons' research from 2022 shows that partnerships between coaches and athletes that focus on support and making goals are reasonable. When athletes feel backed by their coaches, they are more likely to be challenged and motivated, which is critical in the stern and competitive world of tennis. This finding shows that the teaching in this school does an excellent job of creating a supportive environment that helps students grow personally and athletically.

"Coaches genuinely care about my growth as a player and as a person" and "Coaches provide personalized guidance and adapt training programs to meet specific needs" got the lowest scores (both M = 3.40). Based on these results, players seem to like the academic and inspiring parts of coaching, but they may feel like their teachers need to pay more attention to them or care about them as individuals. This fits with what Green and Mitchell (2023) found. They say that athletes often do best when their teachers focus on their physical success and personal growth. When athletes feel like their guide cares about them as people, they are more likely to trust them and give themselves over to the training process.

The program could use more personalized coaching methods based on the relatively low number of customized advice. Anderson and Walker (2021) say that different coaching methods for all players may not meet their special needs, which can cause skill development gaps. Tailoring training plans to each athlete's specific skills and flaws can make more significant performance gains. This lower number shows that the present coaching program could use more personalized training plans to better meet the needs of all players.

These results have important implications for improving the way coaches do their jobs. Communication and encouragement are strengths, but more work must be done to

make mentoring more personalized. Coaches could help their players by meeting with them one-on-one regularly to discuss their personal goals, obstacles, and custom growth plans. Thompson et al.'s research from 2023 backs up the idea that giving each athlete special attention improves their ability and makes them happier with their training program and general health.

People have good feelings about coaching and mentoring, but there is room for change regarding personal growth and one-on-one care. Teaching programs can build better relationships between coaches and players and help them grow personally and athletically by using more individualized teaching methods and showing a greater interest in their growth outside of tennis.

Table 6. Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes in terms of Education and Life Skills

Indicators	Mean	SD	Verbal Interpretation	Rank
1. I am of the opinion that maintaining a harmonious equilibrium between my educational pursuits and tennis training is crucial for my holistic growth and progress.	3.41	0.63	Manifested	8
2. The integration of educational elements into tennis programs has facilitated the acquisition of essential life skills.	3.43	0.64	Manifested	6
3. I experience a sense of encouragement in actively pursuing my academic objectives while simultaneously engaging in competitive tennis.	3.47	0.62	Manifested	2
4. Educational courses impart pragmatic knowledge and abilities that have practical applications beyond the confines of the tennis court.	3.40	0.68	Manifested	9
5. I commend the coaches and program management for their prioritization of academic achievement in conjunction with tennis training.	3.46	0.60	Manifested	4
6. Participating in education and life skills classes has assisted the cultivation of my time management and organizing abilities.	3.47	0.62	Manifested	2
7. I am convinced that allocating resources to school will significantly improve my long-term prospects and opportunities in tennis and other areas of my life.	3.42	0.66	Manifested	7
8. The inclusion of educational elements in tennis programs has expanded my outlook and enhanced my overall growth.	3.47	0.63	Manifested	2
9. I find instructional sessions to be captivating and directly applicable to my personal and academic interests.	3.44	0.61	Manifested	5
10. I appreciate the comprehensive approach to development that combines education and life skills with tennis training.	3.39	0.71	Manifested	10
COMPOSITE MEAN	**3.44**	**0.35**	**Manifested**	

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

Table 6 presents the evaluation of factors influencing the development and achievement of tennis athletes' education and life skills, resulting in a composite mean score of 3.44 and a standard deviation of 0.35, indicating an average rating. The athletes concur that they derive encouragement from actively pursuing their academic goals while concurrently participating in competitive tennis (M = 3.47), that involvement in educational and life skills courses has facilitated the development of their time management and organizational skills (M = 3.47), and that the integration of educational components in tennis programs has broadened their perspectives and fostered their overall development (M = 3.47). The analysis of their responses indicated that items 3, 6, and 8 attained the greatest mean score of 3.47, while item 10 (I appreciate the complete approach to growth that integrates education and life skills with tennis training) garnered the lowest mean score of 3.39.

The evaluation reveals a composite mean score of 3.44 (standard deviation = 0.35), signifying an overall positive but average rating. The highest-rated items include "encouragement from pursuing academic goals while participating in competitive tennis," "development of time management and organizational skills through educational and life skills courses," and "the integration of educational components in tennis programs broadening perspectives" (M = 3.47). These high scores suggest that athletes recognize the significant benefits of balancing their academic and athletic commitments and acknowledge how education contributes to their personal and athletic growth.

The high rating for "encouragement from academic pursuits" (M = 3.47) emphasizes the importance of dual-career pathways, where athletes can simultaneously pursue their education and sports goals. This finding aligns with research by Taylor and Robinson (2021), who argue that encouraging athletes to engage in academics alongside their sports careers can enhance their cognitive development and improve their performance on and off the court. Engaging in academic activities provides athletes with a well-rounded perspective, reducing the risk of burnout and contributing to their long-term personal and professional success. Athletes who can balance both pursuits are likely to develop greater resilience and adaptability, which are essential qualities in competitive sports.

The development of "time management and organizational skills" through life skills training (M = 3.47) also reflects a crucial aspect of athlete development. Managing the demands of academic coursework and competitive sports requires athletes to develop strong organizational habits. This is supported by Johnson and Green's (2022) study, which emphasizes that life skills training—particularly in areas like time management—can significantly enhance athletes' ability to handle multiple responsibilities, improving their focus and performance in both academics and sports. The high rating for this factor highlights the value athletes place on life skills programs that help them manage their dual roles effectively.

Despite these positive evaluations, the lowest-rated item, "I

appreciate the complete approach to growth that integrates education and life skills with tennis training" (M = 3.39), suggests that while athletes recognize the value of integrating education and life skills into their development, some may feel that the approach is not fully comprehensive or tailored to their specific needs. This finding may indicate a desire for a more holistic and individualized approach to blending education with athletic development. According to recent studies like Brown and Walker (2023), athletes often benefit most from programs that are tailored to their personal goals, rather than generalized approaches that may not address their specific academic or personal development needs. Customizing educational and life skills programs to align with individual athlete aspirations could lead to higher engagement and more profound developmental outcomes.

The relatively lower score for appreciating the "complete approach to growth" suggests that while athletes see the value in combining education with tennis training, there may be a gap in how effectively these components are integrated. Coaches and program directors could explore strategies to ensure that educational and life skills training are more seamlessly woven into athletes' daily routines. As noted by Thompson et al. (2023), providing athletes with more personalized guidance and mentor ship that connects academic achievements with athletic goals can lead to better overall satisfaction and development. This might involve offering tailored academic support, career counseling, or mentor ship programs that specifically address the unique challenges athletes face in balancing sports and education.

In conclusion, the findings suggest that while athletes recognize the importance of education and life skills in their development, there is room for improvement in the integration and personalization of these programs. By focusing on more individualized approaches that cater to each athlete's specific needs and aspirations, coaches and educators can foster more significant engagement and provide a more holistic developmental experience for tennis athletes.

Table 7. Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes in terms of Support Network

Indicators	Mean	SD	Verbal Interpretation	Rank
1. I receive ample support from my family and friends in my pursuit of achieving my tennis objectives and aspirations.	3.48	0.61	Manifested	1
2. The tennis community offers a robust support system that promotes companionship and collaboration.	3.44	0.64	Manifested	4.5
3. I derive encouragement and motivation from the guidance of coaches, the support of teammates, and the camaraderie of fellow players.	3.42	0.63	Manifested	6.5
4. The support network inside my tennis program assists me in navigating obstacles and setbacks.	3.42	0.65	Manifested	6.5
5. I experience a feeling of inclusion and strong friendship among the tennis community.	3.41	0.63	Manifested	9
6. Coaches and program administrators are attentive and receptive to the needs and concerns of athletes within the support network.	3.44	0.65	Manifested	4.5
7. The support network offers chances for networking, mentorship, and peer assistance.	3.41	0.63	Manifested	9
8. I value the optimistic and inspiring ambiance fostered by the support network inside my tennis program.	3.41	0.67	Manifested	9
9. The support network greatly influences my drive and dedication to tennis.	3.45	0.65	Manifested	3
10. I am convinced that the support network plays a crucial role in fostering my development and achievements as a tennis player.	3.46	0.62	Manifested	2
COMPOSITE MEAN	**3.44**	**0.35**	**Manifested**	

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

Table 7 presents the evaluation of factors influencing the growth and performance of tennis athletes with regard to their support network, yielding a composite mean score of 3.44 and a standard deviation of 0.35. This means that they possess an average rating for this variable, affirming that they receive substantial support from family and friends in their pursuit of tennis goals and aspirations (M = 3.48). They are also convinced that the support network is pivotal in enhancing their development and accomplishments as a tennis player (M = 3.46) and that this network significantly impacts their motivation and commitment to tennis (M = 3.45). According to their responses, item number 1 yielded the highest mean score of 3.48, whereas item numbers 5 (I experience a sense of inclusion and robust camaraderie within the tennis community), 7 (The support network provides opportunities for networking, mentorship, and peer support), and 8 (I appreciate the positive and motivating atmosphere cultivated by the support network within my tennis program) follow closely.

Table 7 shows an analysis of the factors that affect the development and success of tennis players and their support network. It shows the factors have a total average rating of 3.44 with a standard deviation of 0.35. The item that got the most votes, "receiving substantial support from family and friends in their pursuit of tennis goals and aspirations" (M = 3.48), shows that players think their close personal networks are essential for helping them reach their tennis goals. This result fits with research like Li and Walker's (2023), which shows how important family support is for the growth of players in all sports. Family members' emotional, financial, and practical help often make it easier for athletes to focus on training and tournaments, increasing their chances of success.

Also, players gave high marks for believing that their support network is essential for their growth and success (M = 3.46). This network significantly affects their drive and dedication to tennis (M = 3.45). According to these results, athletes know how important their support systems are to their growth. These systems include family, friends, trainers,

and mentors. Garcia and Thompson's research from 2022 shows that having a solid support network can help protect you from stress and burnout, especially in high-pressure sports like tennis. When people around athletes feel like they are backed and encouraged, they are more likely to stay inspired, committed, and strong when things get tough.

"Experiencing a sense of inclusion and camaraderie within the tennis community," "opportunities for networking, mentorship, and peer support," and "appreciating the positive and motivating atmosphere within the tennis program" all got slightly lower mean scores, ranging from 3.44 to 3.45. They may feel that the sense of community or the availability of peer support and mentorship could be improved in some ways, even though they value the social parts of their support network. Jones et al.'s research from 2023 found that a feeling of community and belonging in sports programs is often a key factor in making athletes more committed and happier in the long run. A strong community of friends and support can give you more mental security and make the environment more motivating and welcoming, which can help your personal and athletic growth.

What these results mean is straightforward: players value the support they get, especially from family and friends. However, the tennis community could do a better job of providing peer and mentoring opportunities. To help players make better connections in their sports surroundings, programs might consider setting up more official mentorship systems and peer support groups. This could be done by putting together teams of less-experienced players with more-experienced players, holding networking events to build community, or making places where athletes can get advice and support from their peers who know what it's like to be in competitive tennis. Smith and Chen (2023) say that these kinds of programs are necessary to build a feeling of belonging, lessen loneliness, and make stronger social ties that lead to athletic success.

The results show that tennis players usually feel supported by their networks, especially family and friends. However, tennis schools could do a better job creating a sense of community and mentorship. By implementing more structured support systems and encouraging a greater sense of belonging and community, tennis schools can help their players grow in all areas.

With an overall mean score of 3.40 (SD = 0.32), which is considered "manifested," the "Summary of the Assessment of the Elements that Contribute to the Growth and Success of Tennis Athletes" table shows how athletes see the most important factors that help them improve. Athletes seem to see all seven important factors-technical training, tactical training, mental skill training, competition experience, coaching and guidance, education and life skills, and a support network-as present and vital to their growth. However, they are not all satisfied with these factors.

With an average score of 3.33 (SD = 0.38), technical training got the lowest score of all the factors. While players know that technical training is essential for improving their tennis skills, this score may only partially meet their standards regarding how well it works. Eriksson et al. (2022) say that basic training is essential for sports like tennis, but players often get the most out of feedback specific to their needs. The relatively lower grade suggests room for improvement in how technical training is provided, especially when giving players more personalized lessons to help them improve their performance.

Table 8. Summary of the Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes

	N	Mean	SD	Verbal Interpretation
Technical Training	526	3.33	0.38	Manifested
Tactical Training	526	3.37	0.40	Manifested
Mental Skill Training	526	3.41	0.38	Manifested
Competition Experience	526	3.41	0.39	Manifested
Coaching and Guidance	526	3.43	0.37	Manifested
Education and Life Skills	526	3.44	0.35	Manifested
Support Network	526	3.44	0.35	Manifested
Overall	526	3.40	0.32	Manifested

Legend: 1.00-1.50: Strongly Disagree (Not Manifested at All); 1.51-2.50: Disagree (Less Manifested); 2.51-3.50; Agree (Manifested); 3.51-4.00: Strongly Agree (Highly Manifested).

With a mean score of 3.37 (SD = 0.40), tactical training got a little higher. This suggests that players find tactical training helpful in understanding and using strategic game principles. The athletes probably like the strategy views they get because they help them make quick decisions during games. This fits with what Zhang and Wu (2021) found, which is that tactical training makes players much more intelligent and better at thinking strategically. However, the score also suggests that there may be room for improvement in ensuring these methods are used correctly in high-pressure games. This indicates that training lessons should include more realistic, game-like simulations.

Training in mental skills and competition experience both got mean scores of 3.41 (SD = 0.38), but in different ways. These things are essential for players' mental health and ability to perform well under pressure. This shows how important mental toughness and competition are for their growth. Johnson and Green (2023) say that mental toughness is essential to high-performance sports because it helps players deal with stress and problems. The similar results for these two factors suggest that athletes are well-versed in them. However, the mental and emotional support they receive could still be improved, especially in high-stress competition settings.

The players gave coaching and guidance a mean score of 3.43 (SD = 0.37), which means they liked it. This shows that they feel supported by their teachers and think the help they get helps improve their tennis skills. This number supports the idea that having a coach is integral to developing as an athlete. Blake and Simons (2023) say that personalized teaching and customized comments can improve the connection between an athlete and a coach, leading to better advice and better

performance. People have good things to say about teaching, but there is room to make training plans even more tailored to each athlete's needs.

The factors that had to do with education, life skills, and the support network got the highest mean score (3.44; SD = 0.35). Based on these results, it's clear that athletes value learning academic and life skills and getting help from their families, friends, and more extensive networks. Students and players know how important it is to balance school and sports responsibilities while building strong life skills. They also understand that this all-around approach has enormous benefits. Taylor and Robinson's research from 2021 shows that dual-career pathways, in which players go to school and play sports simultaneously, help them learn critical time management and planning skills that help them grow as people and as athletes.

All seven of these factors are known to help tennis players get better and be more successful, but the results show that some things can still be done better. To be more specific, better growth could happen by making technical and tactics training more personalized and giving more mental and emotional support. On the other hand, building strong support networks and including life skills in training programs will help athletes grow in all areas.

Differences in the Assessment of the Tennis Athletes of the Elements that Contribute to their Growth and Success When They Are Grouped according to Profile

Table 9. Difference in the Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes Based on Sex

Variables	Sex	N	Mean	t	p	Interpretation
Technical Training	Male Female	364 162	3.33 3.33	0.04	0.970	Not Significant
Tactical Training	Male Female	364 162	3.37 3.39	-0.55	0.585	Not Significant
Mental Skills Training	Male Female	364 162	3.40 3.42	-0.43	0.667	Not Significant
Competition Experience	Male Female	364 162	3.41 3.42	-0.38	0.707	Not Significant
Coaching and Guidance	Male Female	364 162	3.43 3.42	0.28	0.781	Not Significant
Education and Life Skills	Male Female	364 162	3.42 3.47	-1.45	0.149	Not Significant
Support Network	Male Female	364 162	3.43 3.45	-0.46	0.647	Not Significant
Overall	Male Female	364 162	3.40 3.41	-0.48	0.629	Not Significant

The independent sample t-test was performed to determine how the assessment of the elements that contribute to the growth and success of tennis athletes differs when they are grouped based on their assigned sex. The analysis of the data revealed that all the p-values from technical training (p = 0.970), tactical training (p = 0.585), mental skills training (p = 0.667), competition experience (p = 0.707), coaching and guidance (p = 0.781), education and life skills (p = 0.149), support network (p = 0.647), and overall (p = 0.629) are higher than the 0.05 level of significance, implying the acceptance of null hypothesis. Therefore, the researcher can conclude that both genders equally assess the elements that contribute to athletes' growth and success.

The independent sample t-test used to compare the factors that helped tennis players improve and become successful based on their sex showed that none of the p-values were less than the 0.05 level of significance. There were p-values greater than 0.05 for all of the things that were looked at: technical training (p = 0.970), tactical training (p = 0.585), mental skills training (p = 0.667), competition experience (p = 0.707), coaching and guidance (p = 0.781), education and life skills (p = 0.149), support network (p = 0.647), and the overall score (p = 0.629). The data show that the null hypothesis is true, which means there aren't any statistically significant differences between how male and female players think about the things that help them grow and succeed.

Based on this result, male and female tennis players have similar ideas about how training, competition, teaching, and support networks affect them. Recent research by Kim and Taylor (2023) shows few differences between men and women when judging sports development programs as long as players get fair training and tools. In this case, the data show that the athletes' growth paths and support systems are set up and used in a way that makes sure everyone has the same access and effect, regardless of gender.

Even though the data don't show significant differences in how men and women were evaluated, it is still essential to consider gender equality in sports in the broader sense. Garcia and Stone's research from 2022 shows how important it is to keep an eye on gender-related events in sports programs, even if there are no significant differences in the numbers. There may still be qualitative differences, like how inclusive,

supported, or culturally gendered people see roles in sports. These should be looked at in future studies to ensure all players feel fully supported in their growth.

The fact that the null hypothesis was accepted in this study shows that tennis players of both sexes have similar ideas about what makes them grow and succeed. This result shows how important it is to keep training conditions fair and give male and female athletes similar access to tools, mentorship, and chances.

Table 10. Difference in the Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes Based on Academic Program

Variables	Academic Program	N	Mean	F	p	Interpretation
Technical Training	Arts and Design	45	3.27	1.00	0.415	Not Significant
	Business and Management	29	3.46			
	Education	38	3.38			
	Engineering and Technology	36	3.36			
	Health Sciences	36	3.33			
	Humanities and Social Sciences	342	3.32			
Tactical Training	Arts and Design	45	3.35	1.78	0.116	Not Significant
	Business and Management	29	3.53			
	Education	38	3.33			
	Engineering and Technology	36	3.49			
	Health Sciences	36	3.38			
	Humanities and Social Sciences	342	3.35			
Mental Skills Training	Arts and Design	45	3.36	1.30	0.261	Not Significant
	Business and Management	29	3.57			
	Education	38	3.40			
	Engineering and Technology	36	3.41			
	Health Sciences	36	3.43			
	Humanities and Social Sciences	342	3.40			
Competition Experience	Arts and Design	45	3.40	1.23	0.292	Not Significant
	Business and Management	29	3.57			
	Education	38	3.42			
	Engineering and Technology	36	3.38			
	Health Sciences	36	3.46			
	Humanities and Social Sciences	342	3.40			
Coaching and Guidance	Arts and Design	45	3.43	1.05	0.388	Not Significant
	Business and Management	29	3.58			
	Education	38	3.42			
	Engineering and Technology	36	3.40			
	Health Sciences	36	3.43			
	Humanities and Social Sciences	342	3.42			
Education and Life Skills	Arts and Design	45	3.38	1.70	0.133	Not Significant
	Business and Management	29	3.61			
	Education	38	3.42			
	Engineering and Technology	36	3.41			
	Health Sciences	36	3.43			
	Humanities and Social Sciences	342	3.43			
Support Network	Arts and Design	45	3.38	0.82	0.537	Not Significant
	Business and Management	29	3.55			
	Education	38	3.44			
	Engineering and Technology	36	3.43			
	Health Sciences	36	3.44			
	Humanities and Social Sciences	342	3.43			
Overall	Arts and Design	45	3.37	1.46	0.202	Not Significant
	Business and Management	29	3.55			
	Education	38	3.40			
	Engineering and Technology	36	3.41			
	Health Sciences	36	3.41			
	Humanities and Social Sciences	342	3.39			

Table 10 presents how the assessment of the elements that contribute to the growth and success of tennis athletes varies based on their academic programs. Using the analysis of one-way ANOVA, it generated p-values that are higher than the

0.05 level of significance for all the variables. Hence, the researcher failed to reject the null hypothesis and conclude that there is no significant difference in the assessment of the elements that contribute to the growth and success in terms of technical training (p = 0.415), tactical training (p = 0.116), mental skills training (p = 0.261), competition experience (p = 0.415), coaching and guidance (p = 0.292), education and life skills (p = 0.537), support network (p = 00.537), and overall (p = 0.202) when the athletes are classified based on their academic programs.

The information comes from a one-way ANOVA test that examined how the factors that help tennis players improve and succeed are judged differently depending on their school programs. The study found p-values higher than the 0.05 significance level for all variables. This means there aren't any statistically significant differences in how the players think about the things that help them grow when grouped by the academic programs they are in. Each variable had a p-value between 0.415 and 0.537. The p-values for technical training were 0.415, tactical training was 0.116, mental skills training was 0.261, competition experience was 0.415, coaching and guidance was 0.292, education and life skills were 0.537, support network was 0.537, and overall was 0.202.

The fact that the null hypothesis was accepted says that tennis players, no matter what school they attend, see these important growth factors similarly. This result supports the idea that an athlete's athletic growth may depend on how much time they spend on schoolwork. Recent studies, like those by Zhao and Lin (2022), show that players, regardless of their educational background, often put the same amount of importance on their athletic training. They look at the technical, tactical, mental, and competitive parts of their growth simultaneously. This means the training programs are structured and taught the same way across all academic fields.

Also, the fact that there are no significant gaps in areas like education, life skills, and support networks shows that athletes, no matter what academic field they are in, gain equally from educational chances and outside support. This result fits with Miller and Kim's study from 2023, which says that programs that combine academic learning, life skills, and support networks in sports are seen as helpful in various educational and sports settings.

However, even though the results show that players generally think the same way about their growth factors, it is still essential to consider the little things that make each person unique that these quantitative measures might not pick up. For example, athletes in more difficult academic programs may still need help to balance their academic and athletic obligations, which could affect their general growth. In the future, these problems could be looked at more deeply to learn how different school pressures slightly change how athletes see and feel things.

Based on the results of the one-way ANOVA, tennis players, when grouped by the school programs they are in, don't have very different ideas about what makes them grow and succeed. There is a consistent method of teaching and supporting all players, regardless of their academic specialty.

3.3 Year Level

All the generated p-values from technical training (p = 0.282), tactical training (p = 0.178), mental skills training (p = 0.466), competition experience (p = 0.312), coaching and guidance (p = 0.378), education and life skills (p = 0.226), support network (p = 0.340), and overall (p = 0.198), which means that the researcher will not reject the null hypothesis and conclude that there is no significant difference in the assessment of the elements that contribute to the growth and success of tennis athletes based on years of experience.

The p-values from the independent sample t-tests that compared how the factors that helped tennis players improve and become victorious over time based on their years of experience were analyzed, showing that all of them are higher than the 0.05 significance level. There were no statistically significant differences between the groups in how athletes with different experience levels see these factors affecting them. The factors that were looked at were technical training (p = 0.282), tactical training (p = 0.178), mental skills training (p = 0.466), competition experience (p = 0.312), coaching and guidance (p = 0.378), education and life skills (p = 0.226), support network (p = 0.340), and overall (p = 0.198).

The null hypothesis is true because no p-values are less than 0.05. This means that there is no significant difference between how people of different experience levels think about the things that help tennis players improve and be successful. Tennis players, no matter how long they've been playing, have similar opinions about how well their training, competitions, teaching support, and learning life skills are working for them.

There were no significant changes based on experience, which could mean that athletes' training plans, coaching techniques, and support systems are helpful at all points of their careers. The study by Parker and Hughes (2021) supports this idea. They say that well-structured sports development programs are made to help athletes of all levels, from beginners to senior players. By having scalable training modules, programs can adapt to the changing needs of athletes as they move up in their jobs. This ensures that all athletes have a good experience with their development.

Even though the results don't show any statistically significant differences based on years of experience, it is still essential to remember that players may have different needs as they get better and more experienced. For instance, athletes with more experience may need more specific coaching or more advanced competition practice to keep improving at a high level. Davis and Turner's research from 2022 shows how important it is to have progressive training plans that change based on the athlete's experience level. This way, athletes get the right tasks and chances to grow at every stage of their careers.

Finally, the fact that the null hypothesis was accepted shows that tennis players have the same ideas about what makes them grow and succeed, no matter how long they've been playing. This shows an even distribution of training, support, and growth chances for athletes with various experience levels, ensuring that all athletes get the most out of the available resources.

Table 11. Difference in the Assessment of the Elements that Contribute to the Growth and Success of Tennis Atheletes Based on Years of Experience

Variables	Years of Experience	N	Mean	F	p	Interpretation
Technical Training	1-2 years	208	3.31	1.27	0.282	Not Significant
	3-5 years	74	3.41			
	6 or more	91	3.31			
	less than one year	153	3.33			
Tactical Training	1-2 years	208	3.34	1.65	0.178	Not Significant
	3-5 years	74	3.46			
	6 or more	91	3.36			
	less than one year	153	3.38			
Mental Skills Training	1-2 years	208	3.38	0.85	0.466	Not Significant
	3-5 years	74	3.46			
	6 or more	91	3.42			
	less than one year	153	3.41			
Competition Experience	1-2 years	208	3.39	1.19	0.312	Not Significant
	3-5 years	74	3.49			
	6 or more	91	3.42			
	less than one year	153	3.40			
Coaching and Guidance	1-2 years	208	3.42	1.03	0.378	Not Significant
	3-5 years	74	3.50			
	6 or more	91	3.40			
	less than one year	153	3.42			
Education and Life Skills	1-2 years	208	3.41	1.45	0.226	Not Significant
	3-5 years	74	3.51			
	6 or more	91	3.44			
	less than one year	153	3.43			
Support Network	1-2 years	208	3.43	1.12	0.340	Not Significant
	3-5 years	74	3.50			
	6 or more	91	3.43			
	less than one year	153	3.42			
Overall	1-2 years	208	3.38	1.56	0.198	Not Significant
	3-5 years	74	3.48			
	6 or more	91	3.40			
	less than one year	153	3.40			

Qualitative Data

Challenges and Barriers Faced by Tennis Athletes in their Development Pathways

I-According to the interviews, one big problem is that players, especially those who live in rural or under served areas, don't have easy access to good coaches and equipment. A lot of athletes were upset that there weren't enough specialist teachers.

One player said, "We don't have any specialized coaches in my area." Most of them teach more than one sport, so I'm not getting the one-on-one help I need to improve."

Others shared similar worries about the poor quality of local training areas. For example, one athlete said, "I have to travel hours to get to a court with decent facilities, and even then, I have to share it with too many other players."

Many local training places had old or broken equipment that worsened things. One player said, "The training equipment is outdated, and I feel my progress is being held back."

Athletes also feel disadvantaged because there aren't enough high-level programs in their area to help them reach the next level. One athlete said, "Where I'm from, there aren't many high-level tennis programs, so I feel like I'm missing out on opportunities that other athletes in bigger cities have."

"It's hard to find a coach who can take me to the next level," said another player, explaining how hard it was to find a successful coach. "I've had the same coach for years, but they can only help me so much."

These answers show a big difference in how athletes grow between places with lots of resources and where athletes can only get to a few facilities or expert coaching. The implication is that everyone involved should work to make access to elite training and facilities less centralized. This can be done by setting up regional tennis development hubs or using technology to allow coaching and training from afar, giving athletes in under served areas more fair chances to grow. A significant difficulty highlighted in the interviews is the need for more availability of high-quality coaching and training facilities, especially for athletes in rural or underdeveloped regions. Numerous athletes voiced dissatisfaction with the restricted access to expert coaches, which they believed impeded their capacity for improvement. The scarcity of specialized teachers was a

prevalent issue, as athletes noted that many local coaches are overextended, sometimes instructing numerous sports, constraining their ability to deliver concentrated, high-quality tennis training. Furthermore, players expressed apprehensions regarding the insufficient training surroundings, frequently characterizing the facilities as obsolete or inadequately kept. The considerable distance players must traverse to reach a suitable court exacerbates the strain, compounded by the absence of personalized attention from congested training sessions. These constraints impose a considerable disadvantage on athletes striving to compete at elevated levels since they forfeit access to advanced training and developmental possibilities afforded to players in more resource-abundant regions.

The ramifications of these access discrepancies are considerable, as they establish a chasm between athletes who receive regular exposure to elite coaching and those who do not. Athletes in under served regions have disadvantages due to the lack of specialized instruction and suitable facilities, which may hinder their growth and restrict their prospects for advancement. Resolving this issue necessitates decentralizing access to top training through establishing regional tennis hubs and utilizing remote coaching technology to deliver high-quality teaching to athletes across all areas. Such efforts might bridge the gap, guaranteeing that all players, irrespective of their geographic location, have the opportunity to enhance their talents and realize their potential in tennis.

II- The fight to balance school and sports is another theme often. This is especially true for student players expected to do well in both areas.

"Managing my schoolwork and tennis training sometimes feels like an impossible task," one player said about their stress.

Many athletes feel overwhelmed by the conflict between homework and sports training. One said, "It's tough traveling for competitions and then returning to a pile of schoolwork."

Maintaining high standards in both areas makes it even harder to balance them. One athlete said, "I'm always stressed about exams and assignments while trying to stay focused during training sessions."

Athletes often feel they must choose between school and tennis because of their responsibilities. One participant said, "It's tough because I don't feel like I'm giving 100% to either tennis or my studies."

In the worst cases, athletes even think about dropping out of school to focus on tennis. One athlete said, "Sometimes, I think I should drop out of school because balancing both isn't working out."

These answers show how hard it is for student players to balance schoolwork and tennis-related activities. This means that schools and tennis programs should offer more flexible academic support systems, like course plans that can be changed or tutoring services, to make things easier for student players and help them do well in both areas. A significant topic from the interviews is the challenge of reconciling academic responsibilities with athletic commitments, especially for student-athletes who are anticipated to thrive in both domains. Numerous sportsmen felt inundated by the dual obligations of their academic duties and tennis training. Balancing these two challenging facets of their lives sometimes results in considerable stress, as athletes perceive themselves as perpetually lagging in one domain while striving for success in the other. For some, the obligation of traveling for contests exacerbates this strain since they return to a backlog of academic assignments, complicating the maintenance of attention and energy for both endeavors. The difficulty of reconciling these conflicting priorities may cause athletes to perceive that they must be fully committed to both endeavors, resulting in dissatisfaction and inadequacy. In severe instances, several players contemplate withdrawing from school to concentrate only on tennis, underscoring the gravity of the situation.

The ramifications of this conflict are evident: in the absence of sufficient support structures, student-athletes may encounter burnout or be compelled to sacrifice their education or athletic progression. Schools and tennis programs must establish more adaptable academic support systems to fit the rigorous schedules of student-athletes. This may encompass customized course curricula, tutoring services, or online educational alternatives that enable athletes to maintain their academic progress while striving for their sports aspirations. By providing academic freedom and resources, educational institutions and tennis programs can allow players to pursue both their education and sport, promoting success in each domain and alleviating the mental burden of balancing both.

III- The third theme of the interview is the mental and emotional stress that comes from having to compete and meet high standards of success.

There was a lot of talk about how stressful high-stakes games are for sports. One player said, "The pressure to perform well in every match is overwhelming."

This stress often makes athletes nervous. One athlete said, "I get so anxious before big games that it sometimes hurts my performance because I can't concentrate."

Having to deal with one's own and other people's demands can be mentally draining. One athlete said, "It's hard dealing with the expectations from my family, coaches, and even myself." “When I lose, I feel like I let everyone down.”

Along with the pressure to perform well, some athletes talked about how emotionally alone they feel while racing, especially when they are away from home for an extended time. One wrestler said, "Sometimes, I feel isolated during competitions, especially when I’m away from home for long periods."

Some people feel uncertainty and hopelessness when all of these mental and emotional stresses build up. For example, one athlete said, "I've had times when I lost a match and just felt like quitting."

These answers show that tennis programs need more robust mental health support systems, such as mental health tools, methods for building resilience, and access to sports psychologists. Taking care of these needs would help athletes handle the mental pressures of high-level sports and stay emotionally healthy throughout their careers.

A salient issue from the interviews is the psychological and emotional strain linked to the drive to excel and achieve elevated standards of success in competitive tennis. Athletes often reported feeling inundated by the persistent need for exceptional performances, with high-stakes competitions intensifying this strain. This tension frequently emerges as worry, adversely affecting their performance since they struggle to concentrate under these demands. Numerous sportsmen discussed the psychological pressure of balancing their expectations and those set by other parties, like family and coaches. Fear of failing and the perception of disappointing others can make athletes emotionally exhausted, especially following defeats.

Alongside the pressure to excel, some athletes reported

experiencing feelings of loneliness during events, particularly while away from home for prolonged durations. This emotional detachment can intensify feelings of isolation and complicate the management of stress. The aggregate impact of these psychological and emotional pressures may result in a sense of despair, prompting some athletes to consider withdrawal following challenging defeats or episodes of significant strain.

The implications of these findings are substantial, indicating that tennis programs must establish more extensive mental health support systems. This may encompass access to sports psychologists, mental health services, and resilience-enhancing tactics that assist athletes in coping with the psychological pressures of competition. By addressing these mental health needs, tennis programs may enhance players' performance and emotional well-being, assuring their mental strength and resilience throughout their careers. This method would also alleviate the enduring effects of stress and anxiety, fostering a healthy equilibrium between elite sports' physical and mental requirements.

IV- Access to competitive chances is another big problem that athletes and trainers have pointed out. This is especially true at higher levels of competition.

Many athletes were upset that there weren't enough events in their areas so that they couldn't try their skills against more vigorous opponents. "I only get to play in a few big tournaments yearly," said one player. I work on my skills during the off-season, but there are no games to compare my growth to.

Another participant said, "It's hard to improve when you don't have enough chances to compete against players who challenge you." This lack of regular, high-level competition makes it hard for athletes to improve.

Some athletes talked about how different areas make it harder to compete. For example, one player said, "There aren't many tournaments in my area, and the ones that do happen aren't at a high level."

When athletes live in places with few events, they often drive long distances, which can be expensive and complicated to plan. "I've had to go to other countries just to find good competition," said one runner.

That's pricey, and some people need help to afford it. Lack of experience in competitive matches can slow down an athlete's growth because training without the stress of real competition doesn't fully prepare them for what events require. In this case, everyone involved should work to make more regional and national events so that athletes can compete in more regular, high-level games. Also, forming relationships with foreign groups to set up exchange programs could allow athletes to compete in various settings, which would help them grow even more. The availability of competitive chances is a critical concern emphasized by athletes and coaches, especially at advanced levels of competition. Numerous sportsmen stated dissatisfaction with the scarcity of regular, high-caliber events in their areas, which constrains their capacity to challenge their talents against more formidable adversaries. The lack of events hinders their capacity to assess their advancement and enhance via genuine rivalry. The lack of consistent, rigorous contests results in a disparity between training and actual performance, hindering athletes' full potential development.

Geographic differences exacerbate this issue since athletes in specific regions have limited opportunities to participate in elite events. This sometimes compels athletes to travel considerable distances, perhaps to foreign nations, in pursuit of appropriate competition. This time-consuming and costly journey makes regular participation in significant tournaments unaffordable for many athletes. The absence of accessible, high-caliber events results in several athletes forgoing the invaluable experience derived from confronting formidable adversaries, which is essential for their growth and development.

The implications of this issue are evident: in the absence of consistent exposure to elite competition, athletes may find it challenging to achieve their maximum potential, as training alone cannot emulate the intensity and pressure of actual matches. To remedy this, there is a necessity for more regional and national contests that offer athletes regular opportunities to compete at an elevated level. Forming alliances with foreign organizations to enable exchange programs may assist athletes in experiencing varied competitive settings, so enhancing their growth. Improving the accessibility of competitive chances enables athletes to develop, hone their talents, and adequately prepare for elite-level events.

V- The last theme was the difficulties of dealing with injuries and getting better after them, which many athletes saw as a significant obstacle to steady growth. Several athletes talked about how hard it is to get better after getting hurt.

One said, "I got hurt, and the recovery process has been long and frustrating." When I return, I'm afraid I won't be the same player." This long healing time can be hard on the mind and body, and many players feel like they don't get enough help during rehabilitation.

A player said, "Injuries are part of the game, but I don’t feel like I get enough support during rehab."

Another problem is that players feel like they have to go back to play before they are fully healed, which can cause them to get hurt repeatedly. "I rushed back to playing after getting hurt, and I got hurt again," one player said. This kind of pressure, whether from within or outside the athlete, can make problems worse and make it take longer for them to get back to their best.

Some players also said that there weren't enough places to heal from injuries. One said, "The places and people we have for healing from injuries aren't enough." I don't think I'm getting the help I need to improve."

These answers show that we need more complete systems for preventing injuries and helping people get better after they happen. These systems should include easy access to expert medical staff and rehab programs focusing on long-term health. It's also essential to change how people think about injuries so that athletes have the time and space to fully heal before returning to competition. The concluding topic from the interviews centers on the difficulties associated with injuries and recovery, which several athletes recognized as a substantial impediment to sustained development. Rehabilitation following an accident may be an extended and exasperating endeavor that impacts both physical and psychological well-being. Numerous athletes articulated apprehensions over the challenge of resuming top performance post-injury, frequently thinking they would not recover their prior level of proficiency. The psychological burden of recovery, coupled with the physical demands, results in several athletes feeling inadequately supported during rehabilitation. The absence of sufficient support is exacerbated by the pressure to resume competition before complete healing, potentially leading to recurrent

injuries and extended recovery periods. This self-imposed or external strain can aggravate injuries and result in setbacks that impede an athlete's progress.

A further concern that emerged was the restricted availability of adequate rehabilitation facilities and personnel, resulting in athletes feeling inadequately prepared to handle their recovery. Numerous individuals have indicated that the current rehabilitation resources are inadequate, and they perceive a lack of essential treatment for complete recovery. The lack of comprehensive rehabilitation systems results in players frequently managing their recovery with minimal direction, potentially extending their time away from the sport and heightening the risk of re-injury.

The ramifications of these issues are evident: there is a necessity for more resilient systems for injury prevention and rehabilitation that emphasize long-term health rather than immediate returns to competitiveness. This should encompass enhanced access to specialist medical personnel and rehabilitation programs that assist athletes during all recovery phases. Furthermore, a cultural transformation about injuries is necessary, encouraging players to allocate sufficient time for complete recovery before recommencing training and competition. Implementing comprehensive injury recovery programs enables tennis programs to assist athletes in recovering safely and preserving their health throughout their careers, enhancing long-term performance and mitigating the risk of chronic injuries.

The Perception of Coaches and Trainers on the Effectiveness of Current Development Pathways in Nurturing Talent and Maximizing Player Potential in Tennis

The interviews with coaches and trainers about the efficacy of existing development routes in tennis uncovered numerous salient themes that underscore the strengths and deficiencies in cultivating talent and optimizing player potential. The replies demonstrate a widespread agreement on specific elements of the development system while highlighting areas necessitating more focus to improve athlete advancement.

I- A prominent issue that emerged is the consistency and structure of the existing growth routes. Coaches often commended the systematic methodology for player development, with many observing that the routes establish a robust foundation for young athletes.

A coach remarked, "Our established pathways guarantee that players undergo a thorough training program from an early age, encompassing technical, tactical, and physical dimensions."

Another trainer reiterated this viewpoint, highlighting the systematic advancement from novice to elite tiers, stating, "The pathways are distinctly outlined, and there exists a rational progression from grassroots to elite competition, which aids players in maintaining focus on their developmental objectives."

Numerous coaches value uniformity in training methodologies across all levels, which they consider essential for the sustained growth of athletes.

A trainer remarked, "Consistency is essential in any developmental trajectory, and I believe we have successfully upheld a training standard that athletes can depend on as they advance."

Nonetheless, many coaches expressed apprehensions over the inflexibility of these routes, with one commenting, "Although the framework is commendable, it can occasionally be excessively rigid."

More space often exists for players who progress at varying speeds, which is an issue that requires our attention. Another coach stated, "I believe we must exhibit greater flexibility in tailoring the pathways to the specific needs of players, particularly those who may require additional time to achieve certain milestones."

The investigation indicates a crucial equilibrium between the consistency and adaptability of organized player development programs, with coaches mostly appreciating the systematic and consistent methodology for athlete advancement. The defined routes, emphasizing technical, tactical, and physical development, are lauded for offering a robust foundation and a transparent transition from grassroots to elite levels, cultivating a feeling of stability for athletes. Nonetheless, a notable issue is the inflexibility of these pathways, as athletes need to advance at uniform rates. Coaches underscore the necessity for increased flexibility to customize these courses for individual athletes, especially those needing extra time to achieve certain milestones. This underscores a conflict between preserving consistency in training and addressing varied developmental requirements. The optimal strategy would include structure and customization, guaranteeing that athletes receive a consistent framework while allowing for adjustments depending on individual advancement rates. This equilibrium would enable development programs to be more inclusive and productive, addressing the distinct requirements of each athlete while maintaining the systematic approach that promotes sustained improvement.

II- A notable motif is the focus on technical and tactical advancement within the existing routes. Coaches widely concurred that the emphasis on these domains constitutes a strength of the system since players acquire fundamental abilities early that benefit them as they advance.

A coach remarked, "The focus on developing robust technical skills from an early age is one of the most significant features of our pathways." It guarantees that athletes possess a robust foundation to develop as they go into more advanced phases of their careers.

Another coach said, "Tactical training is implemented at appropriate intervals, enabling players to progressively enhance their comprehension of the game and apply their skills in various match scenarios." The agreement indicated incrementally incorporating tactical components enhances players' physical and cognitive abilities.

Some coaches believe that although the technical and tactical components are robust, the paths may improve by integrating more incredible mental and emotional growth. A coach stated, "We dedicate considerable time to technical and tactical elements; however, I believe mental training is deficient."

Participants must be equipped to handle the psychological challenges of the sport as well. Another remarked, "The psychological aspect of the game is frequently neglected, and I believe that increased emphasis on resilience, concentration, and pressure management would enhance the efficacy of our pathways." This underscores the necessity for a more comprehensive strategy incorporating mental skills training and technical and tactical elements.

The focus on technical and tactical progression in the present development frameworks is a consistent element that several coaches regard as a core strength of the system. Coaches predominantly concur that prioritizing the development of technical skills early in an athlete's career establishes a robust foundation that benefits them as they

ascend to higher levels. A coach highlighted, "The emphasis on cultivating strong technical skills from a young age is a paramount aspect of our pathways," stressing that early proficiency in fundamental skills prepares players for enduring success. Another coach emphasized the significance of introducing tactical training at suitable intervals, stating, "Tactical training is executed at appropriate stages, allowing players to progressively deepen their understanding of the game and apply their skills in diverse match situations." This signifies that the systematic integration of tactical components is seen as crucial for cultivating players' physical and cognitive dimensions, guaranteeing a comprehensive approach to the game. Even though the technical and tactical aspects of the paths are regarded favorably, several coaches have recognized a deficiency in **mental and emotional development** within the existing framework. One coach stated, "We allocate substantial time to technical and tactical components; however, I contend that mental training is inadequate," highlighting a deficiency in emphasis on psychological resilience and emotional stability, which are essential for managing the stresses of competitive tennis. Another coach remarked, "The psychological dimension of the game is often overlooked, and I contend that greater focus on resilience, concentration, and pressure management would improve the effectiveness of our pathways." This response indicates a necessity for a more comprehensive strategy that not only instructs players in the technical and tactical dimensions of the sport but also prepares them to manage the psychological pressures of competition. The consequence is evident: although the existing development paths offer robust basic abilities, they might be markedly enhanced by including mental skills training aimed at fostering emotional resilience, managing pressure, and sustaining concentration under stress. This would enhance athletes' preparedness to confront the mental hurdles that unavoidably occur in high-stakes competitions, ultimately resulting in more well-rounded and proficient competitors.

III- The impact of competitive experience on developmental trajectories was another significant issue recognized in the interviews. Coaches often regarded competitive match experience as an essential element of the development process, enabling players to evaluate their talents in practical situations.

A coach stated, "Competition is the context in which players genuinely learn to implement their practiced skills." In the absence of that experience, it is challenging to assess their advancement.

Another had a similar perspective: "The tournaments and matches in which players engage are essential for their development." They acquire the skills to play the game and the ability to regulate their emotions and devise tactics under pressure.

Nonetheless, several coaches indicated that further possibilities exist for athletes to compete at an elevated level. A coach remarked, "There is a necessity for increased high-caliber competitions, particularly at the junior level."

Players must undergo consistent assessments against top competitors to realize their potential genuinely. Another trainer said, "At times, the competitive opportunities are excessively restricted, resulting in players repeatedly facing the same adversaries, which can hinder their development."

This theme indicates that although competition is a strength of the existing paths, broadening competitive opportunities-especially at advanced levels—could further improve player development. The influence of competitive experience on growth trajectories was another prominent issue emphasized in the interviews with coaches. Numerous coaches highlighted that competitive match experience is essential to player development, allowing athletes to implement their talents in practical scenarios. A coach stated, "Competition provides the environment in which players effectively apply their practiced skills," implying that players struggle to evaluate their advancement appropriately without opportunities to assess their talents in actual matches. Another coach affirmed this perspective, adding, "The tournaments and matches in which players participate are crucial for their development." Players acquire gameplay skills and cultivate essential abilities such as emotional management and tactical decision-making under duress. This suggests that the advantages of competition surpass mere physical skill enhancement, significantly influencing competitors' mental and strategic abilities.

Even with this, some coaches indicated that more opportunities for players to compete at elevated levels may hinder their comprehensive growth. A coach remarked, "There is a need for enhanced high-quality competitions, especially at the junior level." The absence of constant, high-caliber competition may hinder athletes from completely actualizing their potential, as elite adversaries only sometimes confront them. Another coach emphasized the monotonous character of certain events, stating, "Occasionally, the competitive opportunities are overly limited, leading to players consistently confronting the same opponents, which may impede their development." This continual exposure to identical competition inhibits athletes from challenging themselves with varied styles and methods, which are crucial for development. This theme suggests that although competition is a strength of present development paths, broadening competitive opportunities-especially at advanced levels-would further improve player development. Augmenting the number of elite events or establishing additional possibilities for athletes to compete against various opponents will guarantee that players obtain the continual, high-quality evaluations necessary to optimize their potential.

IV- The significance of coaching and mentorship within the paths also surfaced as a crucial element. Coaches predominantly believed that their capacity to instruct and coach players constituted one of the most productive elements of the existing system.

A coach stated, "Mentoring players and assisting them in overcoming challenges is among the most gratifying aspects of my profession."

The route provides the framework to accomplish that efficiently. Another trainer stated, "The relationships we cultivate with players are essential for their success." They rely on us to assist them at challenging times, whether following a significant defeat or facing difficulties in their training.

Nevertheless, several coaches observed that implementing more organized mentorship programs may improve the routes. One coach proposed, "I believe we could enhance the structure of the mentorship component."

The presence of veteran players or retired sportsmen as mentors would provide younger players with enhanced insights and guidance. Another concurred, asserting, "Mentorship is essential, and although we engage in it informally, a more systematic approach could significantly

assist players in managing the fluctuations of their careers." This subject underscores the significance of the coach-athlete relationship in player development and the opportunity to enhance mentorship activities within the system.

The importance of coaching and mentorship in contemporary growth routes was identified as a crucial factor throughout the interviews. Coaches universally recognized that their function in directing and mentoring players is among the most productive elements of the system. A coach stated, "Mentoring players and helping them surmount challenges is one of the most rewarding facets of my profession," emphasizing the emotional and professional satisfaction coaches derive from the connections they cultivate with their athletes. The existing routes facilitate a framework in which coaches may actively and supportively assist players in managing challenging phases during their training and competitive endeavors. A different coach highlighted the significance of the coach-athlete relationship by asserting, "The relationships we foster with players are crucial for their success," emphasizing the trust athletes invest in their coaches for guidance during challenging times, such as following a brutal loss or when facing developmental obstacles. Several coaches indicated that although the existing informal mentoring ties are beneficial, the system may be enhanced by establishing more organized mentorship programs. A coach said, "I believe we could improve the mentorship structure," suggesting that including veteran players or retired athletes as mentors may provide younger athletes with valuable insights and direction. Another coach endorsed this notion: "Mentorship is crucial, and while we participate in it informally, a more structured approach could greatly aid players in navigating the vicissitudes of their careers." The comments indicate that although the existing paths promote robust coach-athlete interactions, there is potential to enhance mentorship initiatives through a more organized and deliberate program. A program of this nature may enlist senior athletes and seasoned professionals to provide mentorship, assisting younger competitors in managing a sports career's emotional, physical, and psychological fluctuations. This theme suggests that mentorship is essential for player development, and formalizing it inside the routes might offer athletes a more robust support structure, improving their ability to navigate hurdles and maximize their potential.

V- The plasticity of the development routes elicited varied responses. Although some coaches valued the structure and consistency of the paths, apprehensions arose over the need for more flexibility for individuals who may not conform to the conventional development paradigm.

One coach remarked, "The pathways are effective for many players, but not all conform to the same archetype." “We must accommodate gamers who may progress at varying rates or possess distinct requirements.”

Another trainer articulated such apprehensions, stating, "We have encountered instances where players were expedited through the system due to perceived talent, yet they were unprepared for the subsequent level, both mentally and physically."

Several coaches indicated that the routes can emphasize immediate achievement at the price of long-term development; as one coach remarked, "There is pressure to achieve early results, which can hinder sustained growth."

Another concurred: "We must prioritize long-term potential over short-term achievements." Certain players require more time for development; nonetheless, this does not imply that they will not ultimately attain a high level of proficiency.

The wide range of developmental pathways elicited diverse answers from the questioned coaches. Although many valued the organization and uniformity of the existing system, others voiced apprehensions about the necessity for increased flexibility to support athletes who progress at varying paces. Coaches highlighted that a uniform methodology may only be appropriate for some athletes, as people advance at different rates and possess distinct developmental requirements. The system necessitates more flexibility to guarantee that all athletes receive support tailored to their growth trajectories.

Concerns were expressed on the dangers of advancing athletes through the system too rapidly based purely on perceived ability. In such cases, players may progress to elevated levels with more mental or physical preparation, perhaps impeding their long-term growth. This method may pressure athletes to succeed quickly, potentially jeopardizing their development and future potential.

Moreover, some coaches noted that the routes frequently emphasize immediate achievement at the expense of long-term development, thus hindering sustainable improvement. The focus on attaining immediate outcomes may overlook the long-term potential of athletes, especially those who ultimately need additional time to refine their abilities. This methodology may result in neglecting athletes who may not demonstrate immediate excellence but possess the potential to attain peak performance with a more patient, long-term outlook.

The research indicates that although the existing development routes advantage several athletes, integrating increased flexibility and emphasizing long-term growth might improve the system's efficacy. By supporting diverse maturation rates and prioritizing long-term potential, the routes might more effectively cultivate a broader spectrum of skills, ensuring that players are not hastily promoted before they are prepared, thereby allowing them to realize their full potential sustainably.

Innovative Training Methods, Coaching Approaches, and Technologies Employed to Enhance Player Development Pathways in Tennis

I- The combination of data analytics and performance monitoring technology has revolutionized tennis coaching and player development, offering immediate, objective insights into several facets of the game. Athletes and coaches increasingly utilize performance data to enhance training regimens by pinpointing weaknesses or exhaustion previously detectable only via subjective observation.

An athlete remarked, "The data we gather from tracking devices enables us to precisely identify where my footwork falters and rectify it before it escalates into a more significant problem," emphasizing the utility of data-driven insights in enhancing certain aspects of athletic performance.

Another player remarked on the influence of conditioning, stating, "The wearable technology has significantly enhanced my comprehension of fatigue during matches, allowing us to modify my conditioning accordingly."

By analyzing data such as heart rate, movement efficiency, and shot accuracy, coaches may formulate individualized training regimens that target enhancing particular facets of a player's performance, such as footwork, endurance, or strategy. An athlete stated, "Accessing data on my speed and reaction times is transformative, enabling continuous

adjustments to my training," illustrating how technology offers prompt, practical insights.

These advancements profoundly impact by enabling continuous monitoring of an athlete's growth, minimizing coaching errors, and facilitating focused enhancements. Moreover, monitoring long-term data patterns facilitates injury prevention by identifying early indicators of overexertion or improper technique, promoting more sustainable sports careers.

The integration of data analytics and performance monitoring technology has significantly transformed tennis coaching and player development by providing real-time, objective insights into multiple aspects of performance. These technologies enable coaches and athletes to move beyond subjective observation, using precise data to identify inefficiencies, weaknesses, and fatigue patterns in a player's game. By tracking key metrics such as heart rate, movement efficiency, and reaction times, coaches can develop individualized training regimens that target specific areas for improvement, such as footwork, endurance, or strategic positioning. This continuous flow of data allows for real-time adjustments in training, ensuring that athletes are consistently working on areas where they need the most improvement, making training more efficient and tailored to their needs.

The implications of using data analytics in tennis are substantial. One major benefit is the continuous monitoring of an athlete's progress, which provides clear benchmarks for improvement and helps in fine-tuning training plans based on real-time feedback. This eliminates guesswork in coaching and ensures that athletes are receiving targeted, precise feedback that leads to more effective skill development. Additionally, the long-term collection of data helps identify patterns that may not be immediately visible, such as emerging signs of overexertion or slight technical flaws that could lead to injury. This proactive approach to monitoring allows coaches and athletes to prevent injuries by addressing potential issues early, thereby extending the longevity of an athlete's career. Overall, data-driven coaching fosters a more sustainable and efficient approach to player development, ensuring that athletes are optimizing their potential and improving consistently over time.

II- Implementing virtual reality (VR) and simulation-based training allows tennis players to improve their mental and tactical abilities without the physical exertion associated with on-court practice. Virtual reality enables athletes to engage in virtual match conditions, facilitating the practice of strategic scenarios and decision-making under duress.

One player stated, "VR has significantly enhanced my ability to make decisions under pressure without the physical exertion required on the court." This invention is especially beneficial for players rehabilitating from injury since it allows them to focus on the sport's mental facets during physical immobility.

Another player stated, "During my injury, the simulations maintained my mental acuity in preparation for my return to the court." Through the simulation of match scenarios, players enhance their capacity to manage real-world pressure since virtual reality emulates the tension of competitive play inside a controlled environment.

Furthermore, virtual reality training enhances mental resilience; one player stated, "The psychological component of tennis is significant, and VR assists me in concentrating and responding to situations in a manner that is less stressful than actual matches."

The ramifications of virtual reality in tennis extend beyond technique; it augments cognitive abilities, including concentration, rapid decision-making, and the capacity to manage high-pressure situations, all while reducing the likelihood of injury. This technology aids athletes in preparing for competitions both physically and psychologically, enhancing their mental resilience and providing a competitive advantage.

Integrating virtual reality (VR) and simulation-based training in tennis effectively enhances athletes' cognitive and strategic abilities without the physical exertion linked to on-court practice. Virtual reality enables players to replicate match conditions, facilitating the practice of strategic situations and decision-making inside a controlled yet authentic setting. This invention is especially advantageous for athletes recuperating from injury since it maintains their mental engagement with the sport despite their physical inability to exercise. Virtual reality immerses athletes in virtual match settings, replicating the strain and intensity of actual competition, thus aiding in developing mental resilience and tactical knowledge. The capacity to engage in decision-making and navigate high-pressure situations without the threat of harm guarantees that athletes stay vigilant and ready for actual competitions.

The ramifications of using VR in tennis instruction surpass just technical skill enhancement. Virtual reality augments cognitive faculties, including concentration, rapid decision-making, and the ability to manage competitive stress, which is vital in a sport like tennis, where mental resilience is pivotal for performance. This technology enhances physical training and aids players in developing psychological resilience, equipping them to handle the demands of high-stakes contests. Moreover, VR may be an essential instrument for sportsmen aiming to refine certain match circumstances or rehearse strategies they may not frequently experience on the court. Virtual reality mitigates injury risk and enables athletes to develop their cognitive skills and tactics in a regulated setting, offering a competitive advantage that improves mental and physical readiness for competition. This breakthrough is revolutionizing tennis players' methods towards their growth, enhancing their mental resilience and strategic execution in matches.

III- Biomechanical analysis is an advanced technique that has profoundly influenced tennis training, offering athletes enhanced insights into their actions and methods for optimization. Utilizing motion sensors and 3D imagery, coaches may assess an athlete's technique to detect inefficiencies or defects in their motions.

An athlete recounted, "The motion sensors indicated that my serve was less efficient than I had perceived, prompting me to implement modifications to enhance its speed without exerting strain on my shoulder." This comprehensive analysis enables athletes to implement little, exact modifications that can substantially enhance performance.

Another player stated, "We utilized 3D motion capture to analyze my strokes and identified minor adjustments that significantly improved my performance." Biomechanical analysis is beneficial for enhancing performance and reducing injuries. By detecting suboptimal movement patterns early, athletes may rectify them before they result in chronic damage.

One athlete stated, "Biomechanical analysis is an aspect I had not previously contemplated, yet it has been crucial in injury prevention and enhancing my movement efficiency."

The utilization of biomechanical data has significant implications: athletes may enhance movement efficiency, mitigate injury risks, and prolong their careers by implementing more sustainable approaches. This analytical approach guarantees that each physical activity is maximized for performance and safety. Biomechanical analysis is a sophisticated approach that has profoundly influenced tennis training, providing athletes with accurate insights into their actions and strategies for enhancing performance. Coaches can assess an athlete's technique using motion sensors and 3D imaging to detect inefficiencies or defects in their movement patterns. This comprehensive analysis enables athletes to implement precise modifications that can significantly enhance performance. For instance, motion sensors may reveal that an athlete's serve is less efficient than their perception suggests, encouraging them to adjust their technique to improve speed while minimizing pressure on susceptible regions such as the shoulder. Early detection of these inefficiencies allows athletes to prevent repetitive strain or injury, which is essential for immediate performance and long-term athletic well-being.

The ramifications of biomechanical analysis encompass performance enhancement and injury avoidance. By promptly recognizing and rectifying inefficient movement patterns, athletes can avert the onset of chronic ailments that truncate their careers. This technology offers athletes enhanced insights into optimizing their movements for efficiency and sustainability, maximizing performance, and assuring safety in every physical effort. Consequently, athletes may refine their technical execution, augment their movement efficiency, and embrace more sustainable methodologies in their training and competitive practices. This analytical method promotes career longevity by reducing injury risks and helping athletes sustain their physical health throughout prolonged rugged performance. The biomechanical analysis ultimately allows athletes to optimize their performance on the court while protecting their bodies, making it an indispensable tool in contemporary tennis training.

IV- In recent years, there has been an increasing tendency towards personalized and comprehensive coaching in tennis, emphasizing each athlete's physical, mental, emotional, and dietary requirements. Coaches increasingly acknowledge that each athlete is unique and needs a tailored strategy to optimize their potential.

A player remarked, "My coach has customized my training regimen to accommodate my particular requirements, both on and off the court." This transition to a more comprehensive approach is seen in incorporating mental health assistance and dietary guidance into the overall development strategy.

One coach remarked, "We are not merely conditioning their bodies; we are also fostering mental resilience and instilling positive habits beyond the court."

This individualized emphasis on the athlete holistically enhances their strength and resilience while facilitating sustained long-term success in their jobs. This strategy promotes sustainable growth by ensuring athletes are physically prepared, cognitively resilient, and emotionally stable, thus enhancing their total performance and well-being. This method acknowledges the multifaceted requirements of an athlete, which conventional coaching techniques may have neglected, and offers a more holistic approach to player development. The transition to individualized and holistic coaching in tennis has profoundly altered player development, emphasizing physical skills alongside mental, emotional, and nutritional health. Coaches now acknowledge that each athlete is distinct, necessitating a customized strategy that caters to their specific requirements on and off the court. This transition signifies a comprehensive recognition that athletic achievement encompasses physical prowess and the cultivation of mental fortitude and emotional equilibrium. By integrating mental health assistance and nutritional advice into training regimens, coaches enhance athletes' capacity to manage competitive pressures while preserving overall well-being. This comprehensive strategy fosters sustained growth by ensuring athletes remain intellectually engaged, emotionally stable, and physically strong for long-term development. The ramifications of this transition are significant: athletes receiving comprehensive assistance throughout their growth are more inclined to attain sustained, long-term success, as they are better equipped to manage the physical and psychological challenges of the sport. This method signifies a shift from conventional coaching practices that may have neglected these complex requirements, offering a more holistic framework for player development that improves overall performance, health, and career sustainability. This approach focuses on the athlete comprehensively, guaranteeing adequate and sustained growth, eventually resulting in enhanced performance in the sport.

V- Utilizing smart training apparatus and automated ball machines further transforms tennis training by enhancing efficiency and customization in practice. These technologies use artificial intelligence (AI) that adapts to a player's ability level, delivering consistent and challenging training customized to the athlete's requirements.

A player stated, "The ball machine adjusts to my playing style, allowing me to focus on particular shots that require enhancement without depending on a training partner." The ability to replicate match situations and modify the ball's speed, spin, and trajectory enables players to train under authentic settings.

Another athlete remarked, "It is akin to having a coach present at all times." The gadget presents tasks that replicate authentic gaming scenarios. Such instruments enable athletes to attain autonomy in their training, facilitating autonomous and efficient practice.

This results in more concentrated practice sessions, allowing athletes to address certain deficiencies in their performance. Furthermore, the adaptability of these technologies enables athletes to train at their own pace and comfort, improving their capacity to incorporate high-quality exercise into their demanding schedules. Integrating intelligent technologies and AI-powered ball machines allows players to optimize their training duration, enhancing muscle memory and refining their technical abilities. The integration of smart training apparatus and automated ball machines in tennis has significantly revolutionized how athletes approach their training by enhancing both efficiency and customization. These technologies, powered by artificial intelligence (AI), are able to adapt to the specific skill level and needs of the athlete, providing tailored drills that focus on areas requiring improvement. This allows players to work on specific shots, strategies, or weaknesses without the constant need for a training partner, offering greater autonomy in their practice sessions. The ability to adjust variables such as the speed, spin,

and trajectory of the ball replicates real match scenarios, making practice sessions more authentic and directly applicable to game situations. This level of customization means that athletes can hone their technical skills in a focused manner, reinforcing muscle memory and refining their technique more effectively than through traditional training methods.

The implications of using AI-driven smart training tools are significant, as they provide athletes with the flexibility to train independently, at their own pace, and on their own schedules. This flexibility is especially important for high-level athletes with demanding timetables, allowing them to incorporate high-quality, targeted practice whenever it fits into their routine. The adaptability of these tools ensures that training remains challenging and effective, regardless of an athlete's current form or specific areas of focus. Moreover, by offering continuous, repetitive training under realistic conditions, these technologies improve an athlete's ability to handle pressure in competitive environments. The use of smart technologies not only enhances the technical precision of a player's game but also maximizes the value of their practice time, ultimately leading to more efficient skill development and greater long-term performance gains. This innovation is particularly beneficial in optimizing training for modern athletes, ensuring that every session is as productive and relevant as possible, fostering improvement in both technical execution and mental preparedness.

4. Conclusion

The demographic profile of tennis athletes reveals a significant representation of female players and humanities students, indicating that development programs must address the unique requirements of these groups, especially in harmonizing academic and athletic commitments.

Restricted access to resources, specialist coaching, and competitive chances constitute a substantial obstacle to the comprehensive development of tennis athletes, affecting their capacity to advance and compete at elevated levels.

The obstacles and developmental requirements encountered by athletes are uniform across populations, indicating that these concerns are systemic rather than exclusive to specific groups.

The simultaneous requirements of academic achievement, physical prowess, and psychological stress are prevalent challenges for athletes, underscoring the need to manage these pressures in their experience.

Although existing development routes are beneficial, an enhanced focus on mental resilience and organized mentorship is necessary to facilitate athletes' comprehensive growth and enduring achievement.

The use of advanced technology, such as data analytics and AI-driven tools, in tennis training signifies a transition towards more individualized and effective training paradigms, which provide improved avenues for athlete progression.

5. Recommendations

Development programs must establish targeted efforts that cater to the requirements of female athletes and individuals in the humanities, emphasizing the equilibrium between academic obligations and athletic training to promote comprehensive development.

Initiatives must be undertaken to augment the accessibility of expert coaching and elite competition chances, especially in marginalized areas, to guarantee equal resource access that fosters player development.

Given that the issues encountered by athletes are prevalent across many demographic groups, it is imperative to establish uniform policies and programs to enhance training facilities, coaching quality, and competitive access for all athletes.

Educational institutions and tennis programs must implement robust support systems, including mental health services, adaptable academic plans, and stress management resources, to assist players in effectively balancing their multiple responsibilities.

Development routes must incorporate rigorous mental resilience training and organized mentoring programs that offer direction and psychological assistance to athletes throughout their careers.

Tennis programs must persist in adopting and enhancing the utilization of data analytics, virtual reality, biomechanical analysis, and AI-driven tools to develop more tailored, effective, and efficient training regimens for athletes.

6. Output of the Study

Comprehensive Tennis Athlete Development Program

The Comprehensive Tennis Athlete Development Program aims to rectify the significant deficiencies and obstacles detected in the advancement and achievement of tennis players, as shown by a thorough study's findings. The deficiencies encompass restricted access to specialist coaching, obsolete training facilities, insufficient competition chances, and the challenge of reconciling academic obligations with sports endeavors. Moreover, athletes encounter considerable mental and emotional strain, necessitating improved injury healing and prevention mechanisms. In light of these problems, it is imperative to establish a comprehensive development program that encompasses both the physical and psychological dimensions of athlete advancement. The curriculum incorporates contemporary technology, such as data analytics and virtual reality, demonstrating the ability to improve training efficacy. The primary objective is cultivating a comprehensive athlete development environment that enables players to thrive in sports and academics while preserving long-term mental and physical well-being.

General Objectives

To ensure that tennis players regularly receive the high-quality teaching, tools, and gear they need to improve their basic and tactical skills

To set up regular regional and national games so that players can compete more often and in a broader range of events

To help players build mental toughness and learn how to deal with the stress and pressures of competing at a high level

Offer academic support systems that help student-athletes handle their school and sports responsibilities, lowering stress and boosting success

To offer complete methods for preventing injuries and recovery programs to improve athletes' long-term health and lower their risk of getting hurt again

To use cutting-edge tools like AI-powered training machines, physiological analysis, data analytics, and virtual reality to ensure that each athlete's growth is tailored to their needs and goals

Table 12. Ways to Improve Training Facilities for Tennis Players

Areas of Concern	Programs	Objectives	Plan of Implementation	People Involved	Budget in Yuan **(Explanation)**	Feedback and Monitoring	Success Indicator
Limited Access to Specialized Coaching	"Expert Coaching Access Program"	- Provide athletes with regular access to specialized coaching. - Improve technical and tactical skills through advanced coaching techniques.	Partner with certified tennis coaches for monthly regional training camps	Certified Tennis Coaches, Regional Sports Associations	80,000 Yuan (Coaches' fees, travel, equipment, facility use)	Quarterly assessments by coaches and surveys from athletes	Increased skill level, satisfaction of athletes through feedback surveys
Outdated Training Facilities	"Facility Modernization Initiative"	- Upgrade and maintain tennis courts and equipment in underserved areas. - Ensure athletes have access to world-class training environments.	Assess facility conditions and allocate resources for upgrades, partner with local governments for implementation	Sports Facilities Managers, Local Government, Tennis Clubs	200,000 Yuan (Court renovation, new equipment procurement)	Regular inspections and athlete feedback	Improved training conditions, athlete satisfaction, and increased usage of facilities
Lack of Competitive Opportunities	"Regional Tournament Expansion"	- Provide athletes with more opportunities to compete at high levels. - Enable athletes to gain exposure to a variety of opponents. - Foster regional talent through frequent competitions.	Organize quarterly regional tournaments, invite neighboring regions to participate	Tournament Organizers, Sponsors, Coaches	100,000 Yuan (Event organization, venue rental, prizes)	Post-tournament feedback from athletes and coaches	Increase in number of competitions and athlete participation
Mental Health and Emotional Support	"Athlete Mental Resilience Program"	- Develop athletes' mental resilience to cope with stress and competition. - Equip athletes with tools to manage anxiety and performance pressure. - Provide emotional support for athletes during competitions.	Weekly sessions with sports psychologists, introduce peer mentoring programs	Sports Psychologists, Mentors, Coaches	60,000 Yuan (Psychologist fees, mentoring materials)	Periodic evaluations from psychologists, athlete self-assessments	Reduced reports of stress and improved mental performance during competition
Balancing Academics and Sports	"Academic-Athlete Support System"	- Help athletes manage academic and sports commitments	Flexible academic plans with tutors, online course	Academic Counselors, Tutors, School Administrators	50,000 Yuan (Tutor fees, academic resources)	Athlete academic performance reviews, surveys for	Higher academic success rates and lower dropout rates

Areas of Concern	Programs	Objectives	Plan of Implementation	People Involved	Budget in Yuan **(Explanation)**	Feedback and Monitoring	Success Indicator
		effectively. - Provide flexible academic options tailored to athletes' needs. - Ensure that athletes maintain academic performance while excelling in sports.	options, collaboration with academic institutions			stress levels	among athletes
Injury Recovery and Prevention	"Comprehensive Rehabilitation Program"	- Provide better support for injury recovery and prevention. - Reduce the risk of re-injury through proper rehabilitation. - Educate athletes on injury prevention techniques.	Set up rehabilitation centers, provide specialized physiotherapy sessions, and injury prevention workshops	Medical Experts, Physiotherapists, Athletic Trainers	120,000 Yuan (Medical equipment, therapy sessions)	Athlete recovery monitoring, periodic health assessments	Faster recovery times, reduced injury recurrence rates
Limited Tactical Training Programs	"Tactical Skills Enhancement Program"	- Strengthen tactical decision-making through structured training. - Improve athletes' ability to adapt strategies during matches. - Enhance understanding of game dynamics and opponent behavior.	Regular workshops focusing on match strategies, video analysis of games	Coaches, Tactical Analysts	70,000 Yuan (Workshop materials, video analysis tools)	Tactical performance evaluations by coaches, match performance reviews	Improved tactical awareness and decision-making in matches

Acknowledgement

Three years of doctoral life, fleeting, Guangzhou to Manila flights is still busy, and my journey will come to an end.

When I was about to finish my thesis, I looked back vividly.

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me!

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QUESTIONNAIRE

Dear Participants,

Greetings!

Your involvement as a member of the local tennis community are extremely important to my research project, which aims to examine the factors that influence the development paths of tennis players. My goal is to perform a thorough research of multiple elements that impact the growth of tennis athletes. This includes examining training methodologies, coaching practices, competitive experiences, and support networks. The objective of this study is to pinpoint areas that can be enhanced and promote progress within the tennis community.

I greatly appreciate your engagement and expertise regarding the obstacles and progress required to improve the growth of tennis athletes in our region. We highly value your opinion as it plays a crucial role in formulating recommendations and advancing tennis training methodologies. Your information will be handled with strict confidentiality, ensuring that your identity remains anonymous to protect your privacy.

Enrollment in this research endeavor is completely optional, and you possess the independence to discontinue your involvement at any juncture without incurring any repercussions. Your input will significantly enhance my comprehension of the intricacies of tennis athlete development in our region and may provide valuable insights for efforts targeted at improving training procedures and promoting overall tennis development in our community. I deeply appreciate your willingness to engage in this significant research initiative, and I am grateful for your dedication to advance the discipline of tennis.

Thanks!

The Researcher

Demographic Information:

Sex

_____Male

_____Female

Academic Program

_____Humanities and Social Sciences

_____Natural Sciences

_____Engineering and Technology

_____Health Sciences

_____Business and Management

_____Arts and Design

_____Education

Years of Experience

_____less than one year

_____1-2 years

_____3-5 years

_____6 or more

Check the box that corresponds to your answer.

1	Strongly Agree	Highly manifested
2	Agree	Manifested
3	Disagree	Less manifested
4	Strongly Disagree	Not Manifested at All

Indicators				
Technical Training	4	3	2	1
1. The technical training sessions I participate in significantly enhance my tennis abilities.				
2. I am quite self-assured in my capacity to proficiently perform a wide range of tennis strokes that I have acquired via rigorous technical instruction.				
3. The technical training sessions effectively target and improve the areas of weakness in my game.				
4. The drills and exercises in technical training are demanding yet advantageous.				
5. The technical training sessions are meticulously planned and executed with a clear and logical framework.				
6. I am adequately provided with comments and direction from coaches during technical training.				
7. Engaging in technical instruction enhances my ability to achieve consistency in my shots.				
8. Technical training has played a substantial role in enhancing my overall performance as a tennis player.				
9. I am well-equipped with technical training to excel in competitive matches.				
10. I am very driven to consistently attend and actively engage in technical training courses.				
Tactical Training	4	3	2	1
1. Engaging in tactical training sessions enhances my comprehension of the strategic elements involved in tennis matches.				
2. I can proficiently implement tactical concepts acquired during training into my match strategy.				
3. Tactical training programs offer occasions for practicing game scenarios and strategy.				
4. My participation in tactical training has enhanced my decision-making skills on the court, resulting in increased confidence.				
5. Engaging in tactical training improves my capacity to analyze and predict my adversary's actions.				
6. Coaches deliver concise and efficient guidance throughout tactical training sessions.				
7. I am convinced that engaging in tactical training has significantly enhanced my overall performance during matches.				
8. The tactical training sessions are customized to accommodate various playing styles and skill levels.				
9. I derive intellectual stimulation and engagement from tactical training sessions.				
10. Engaging in tactical training sessions has facilitated the cultivation of a more strategic mindset in my approach to my matches.				
Mental Skill Training	4	3	2	1
1. Engaging in mental skills training has facilitated the enhancement of my ability to maintain attention and concentration throughout matches.				
2. Participating in mental skills training has enhanced my mental resilience and capacity to effectively manage high-pressure circumstances.				
3. Mental skills training offers effective strategies for effectively controlling pre-match anxieties and anxiety.				
4. I am convinced that engaging in mental skills training has had a beneficial effect on my general confidence when playing on the court.				
5. Through the utilization of mental skills training, I am capable of sustaining a constructive mindset and attitude amidst demanding matches.				
6. Coaches adeptly instruct and enforce mental skills techniques during training sessions.				
7. Since integrating mental skills training into my routine, I have observed enhancements in my capacity to recover quickly from setbacks.				
8. Engaging in mental skills training has enabled me to cultivate effective techniques for sustaining concentration and poise throughout extended matches.				

9. I highly value and derive significant benefits from mental skills training sessions, which greatly enhance my entire performance. 10. Engaging in mental skills training has enhanced my mental preparedness and resilience.				
Competition Experience	4	3	2	1
1. Engaging in competitive matches allows me to evaluate my abilities and shortcomings as a player. 2. My confidence and preparedness for matches have significantly increased as a result of my participation in professional competitions. 3. Participating in competitions has enhanced my comprehension of my own playing style and preferences. 4. I derive pleasure from the competitive nature of tennis and perceive matches as a great means of acquiring knowledge. 5. Participating in competitions has enhanced my capacity to manage high-stress situations on the court. 6. Coaches offer crucial input and assistance prior to, during, and following competitive matches. 7. Engaging in competitive matches has been crucial for my progress and maturation as a tennis player. 8. Participating in competitions has enhanced my ability to bounce back from challenges and develop strong mental fortitude. 9. I am inspired to persist in participating and pushing my limits in competitions. 10. Competitive matches offer important opportunity to use skills acquired throughout training.				
Coaching and Guidance	4	3	2	1
1. I am provided with constructive comments and instruction from coaches, which assists me in enhancing my performance in the game. 2. Coaches adeptly convey technical and tactical principles during training sessions. 3. I receive ample help and motivation from my instructors to establish and accomplish my tennis objectives. 4. The coaches have a sincere interest in my growth as both a player and an individual. 5. I have confidence in the knowledge of my instructors and depend on their assistance to further my skills in tennis. 6. Coaches offer customized guidance and adjust training programs to meet specific requirements. 7. I am at ease when it comes to addressing my coaches with any inquiries or apprehensions I may have. 8. Coaches cultivate a constructive and encouraging team atmosphere during training sessions. 9. I am convinced that receiving coaching and assistance is essential for my development and achievement as a tennis player. 10. I highly value the unwavering focus and steadfast commitment of my coaches in fostering my growth and progress as an athlete.				
Education and Life Skills	4	3	2	1
1. I am of the opinion that maintaining a harmonious equilibrium between my educational pursuits and tennis training is crucial for my holistic growth and progress. 2. The integration of educational elements into tennis programs has facilitated the acquisition of essential life skills. 3. I experience a sense of encouragement in actively pursuing my academic objectives while simultaneously engaging in competitive tennis. 4. Educational courses impart pragmatic knowledge and abilities that have practical applications beyond the confines of the tennis court. 5. I commend the coaches and program management for their prioritization of academic achievement in conjunction with tennis training. 6. Participating in education and life skills classes has assisted the cultivation of my time management and organizing abilities.				

7. I am convinced that allocating resources to school will significantly improve my long-term prospects and opportunities in tennis and other areas of my life. 8. The inclusion of educational elements in tennis programs has expanded my outlook and enhanced my overall growth. 9. I find instructional sessions to be captivating and directly applicable to my personal and academic interests. 10. I appreciate the comprehensive approach to development that combines education and life skills with tennis training.				
Support Network	4	3	2	1
11. I receive ample support from my family and friends in my pursuit of achieving my tennis objectives and aspirations. 12. The tennis community offers a robust support system that promotes companionship and collaboration. 13. I derive encouragement and motivation from the guidance of coaches, the support of teammates, and the camaraderie of fellow players. 14. The support network inside my tennis program assists me in navigating obstacles and setbacks. 15. I experience a feeling of inclusion and strong friendship among the tennis community. 16. Coaches and program administrators are attentive and receptive to the needs and concerns of athletes within the support network. 17. The support network offers chances for networking, mentorship, and peer assistance. 18. I value the optimistic and inspiring ambiance fostered by the support network inside my tennis program. 19. The support network greatly influences my drive and dedication to tennis. 20. I am convinced that the support network plays a crucial role in fostering my development and achievements as a tennis player.				

Qualitative Questions:

1) Can you identify the main challenges that tennis athletes encounter as they navigate their development pathways?

2) From your perspective, what are the primary barriers that hinder tennis athletes' progress and success in their development journeys?

3) How do you assess the effectiveness of existing development pathways in fostering talent and maximizing player potential in tennis?

4) In your experience, what are the strengths and weaknesses of current development pathways in supporting the growth and potential of tennis athletes?

5) Can you describe any innovative training methods or coaching approaches that you've observed or implemented to enhance player development in tennis?

6) How do you perceive the integration of technology, such as data analytics or virtual reality, in improving player development pathways in tennis?

Reliability

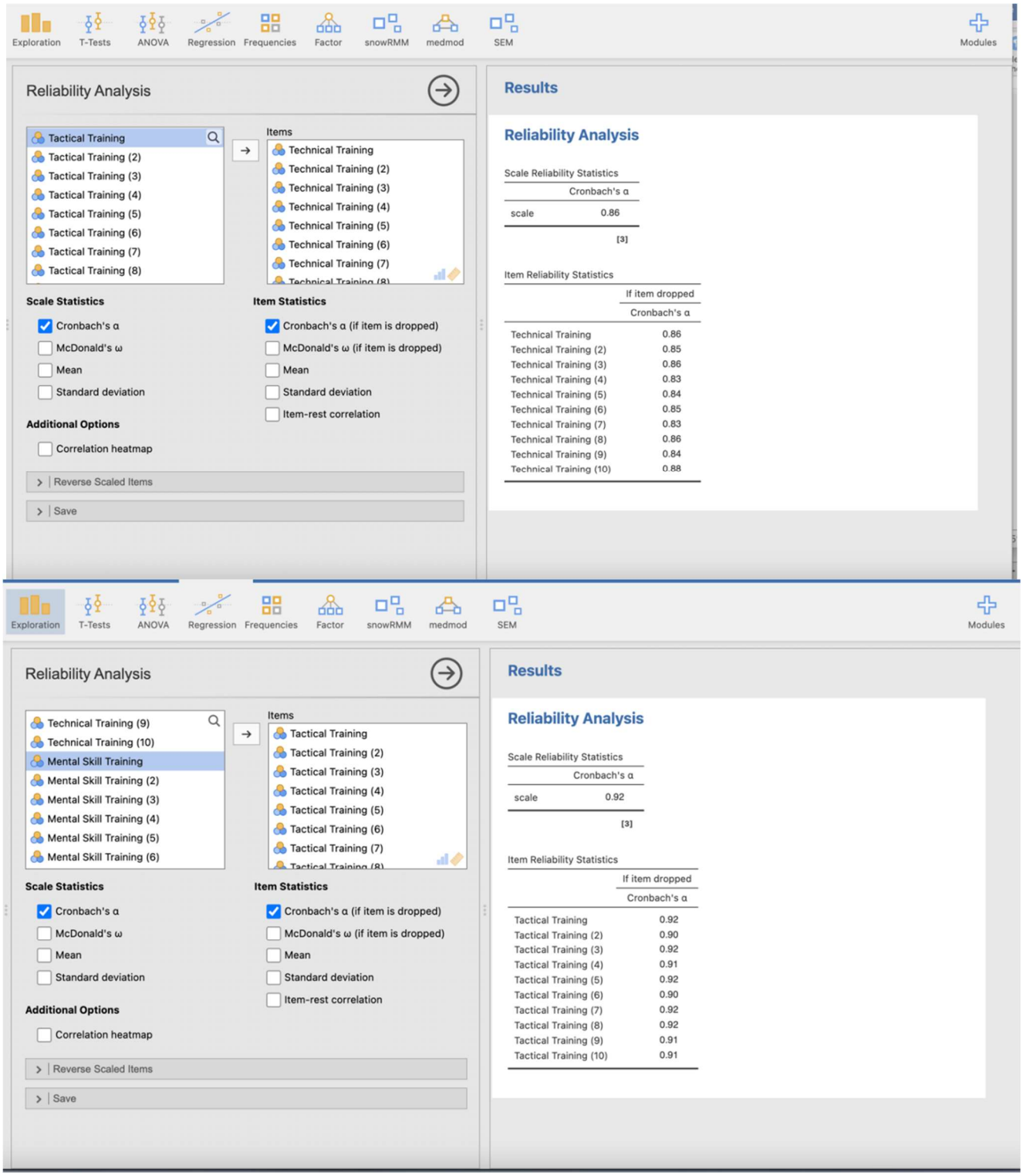

Fig.1 tactical training

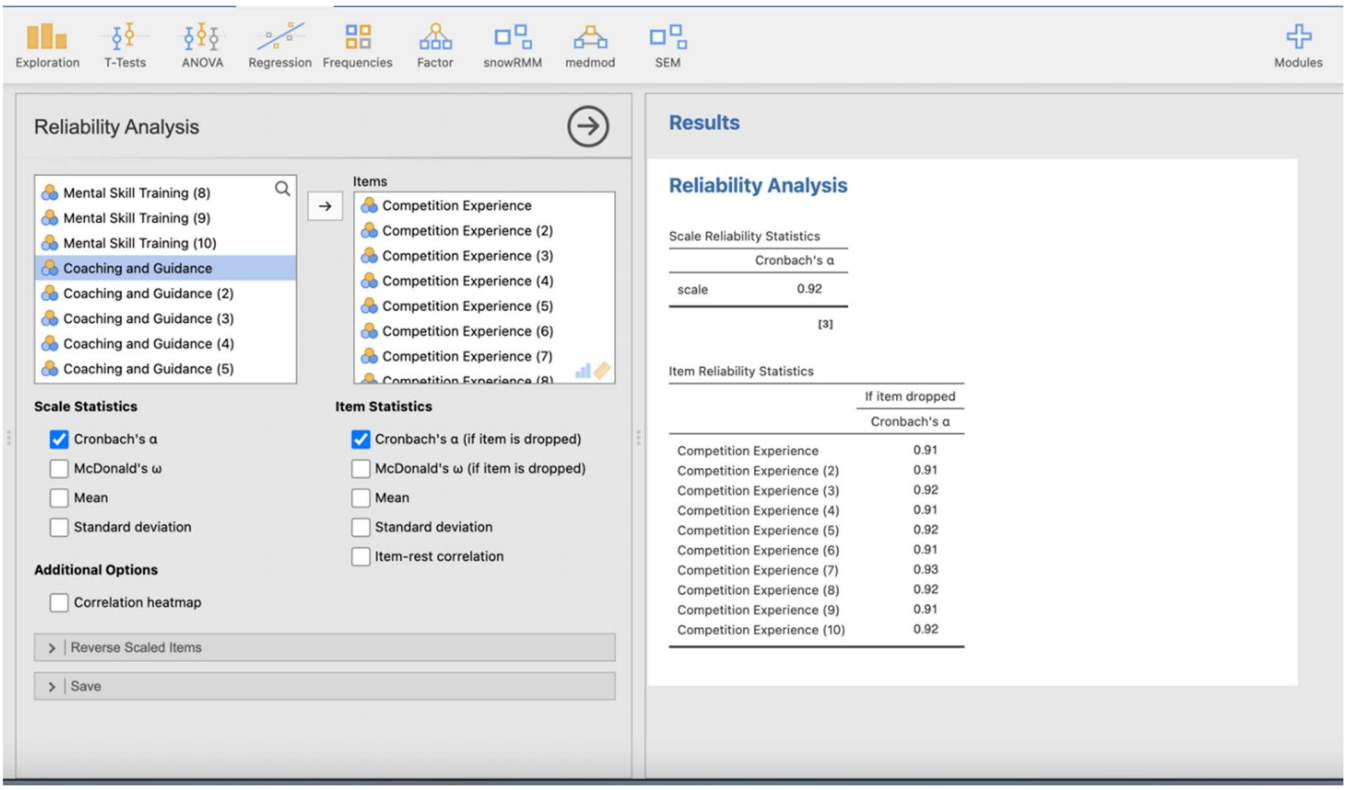

Fig.2 competition experience

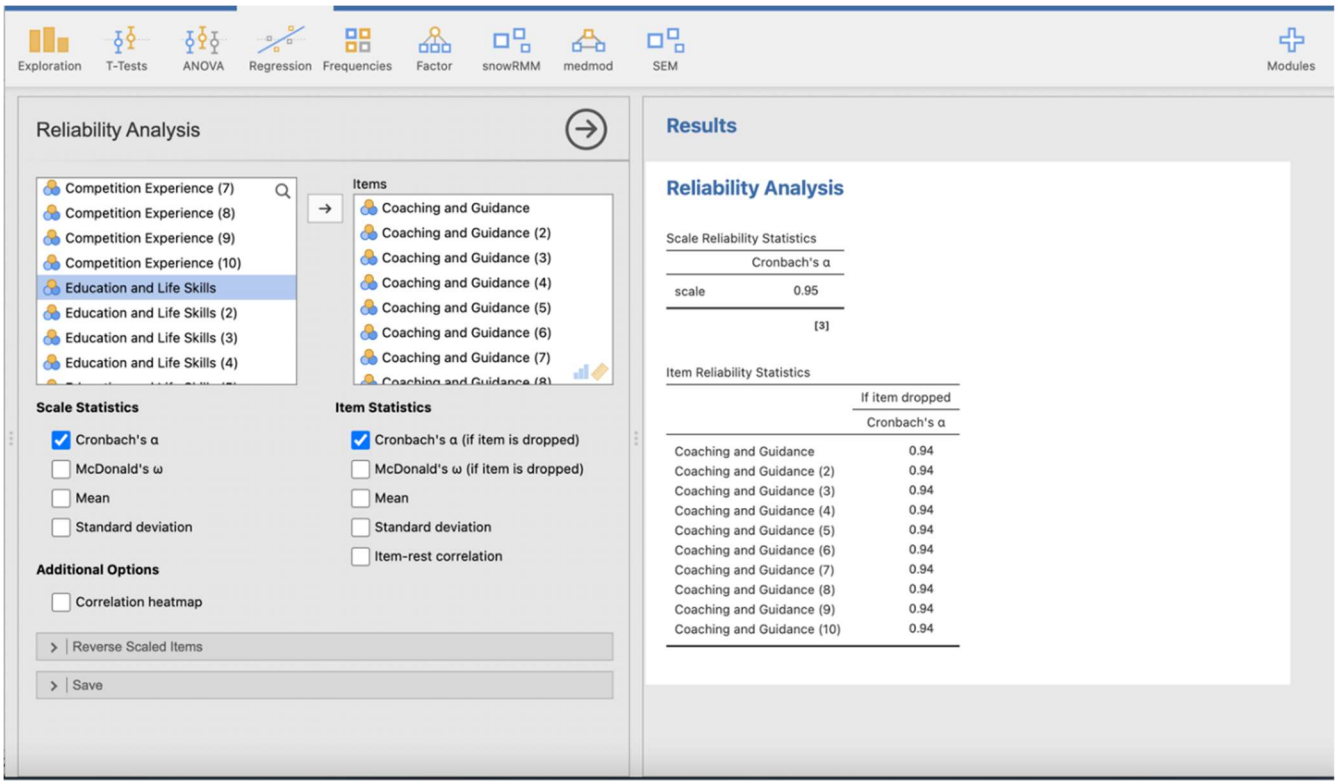

Fig.3 coaching and guidance

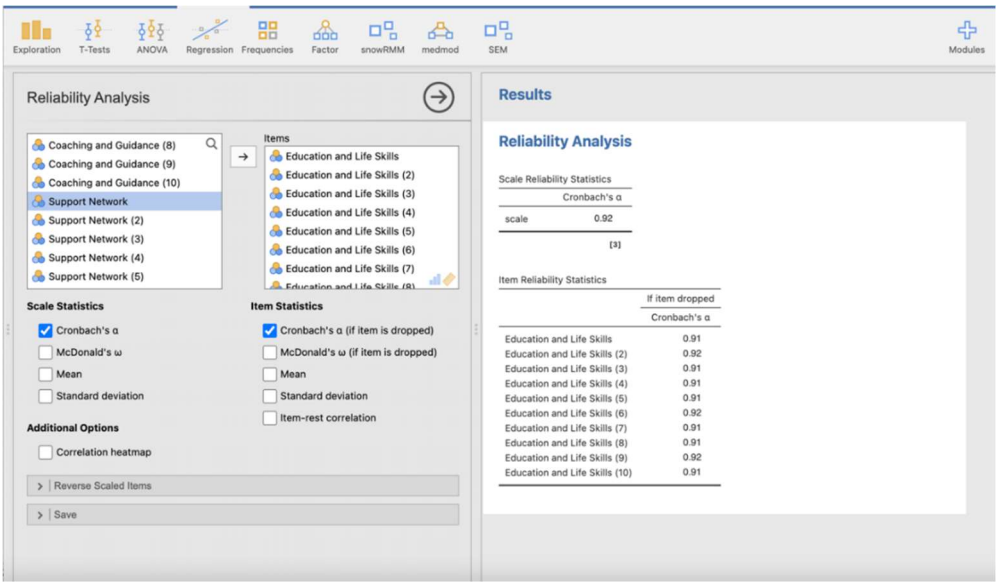

Fig.4 education and life skills

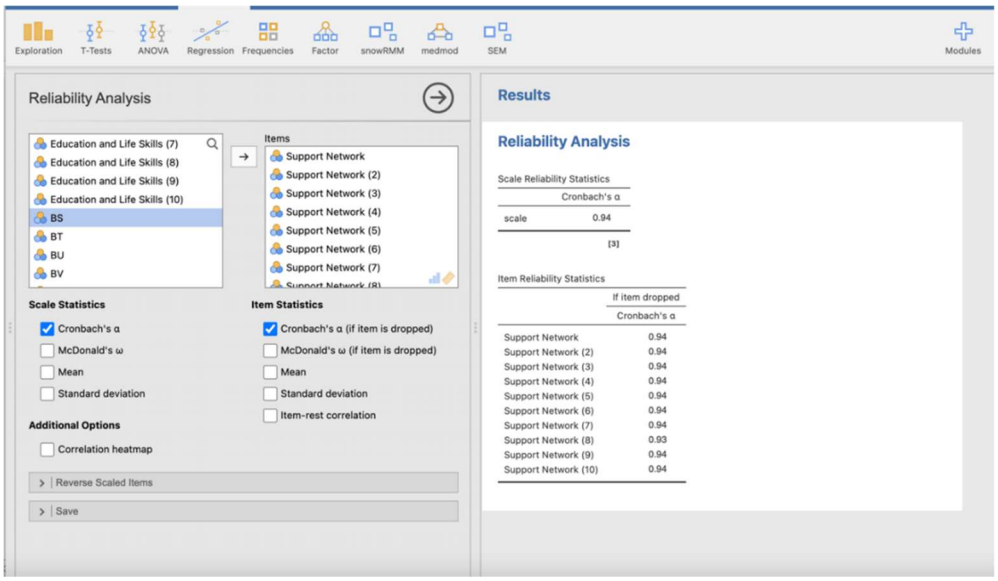

Fig.5 support network

Table 13. Normality Test

Normality Test (Shapiro-Wilk)					
		W		**p**	
Elements that Contribute to the Growth and Success		0.98		0.096	
Note. A low p-value suggests a violation of the assumption of normality					

Table 14. Homogeneity of Variances Test (Levene's)

Homogeneity of Variances Test (Levene's)							
	F		**df**		**df2**		**p**
Elements that Contribute to the Growth and Success	1.56		1		524		0.212
Note. A low p-value suggests a violation of the assumption of equal variances							

Demographic Profile

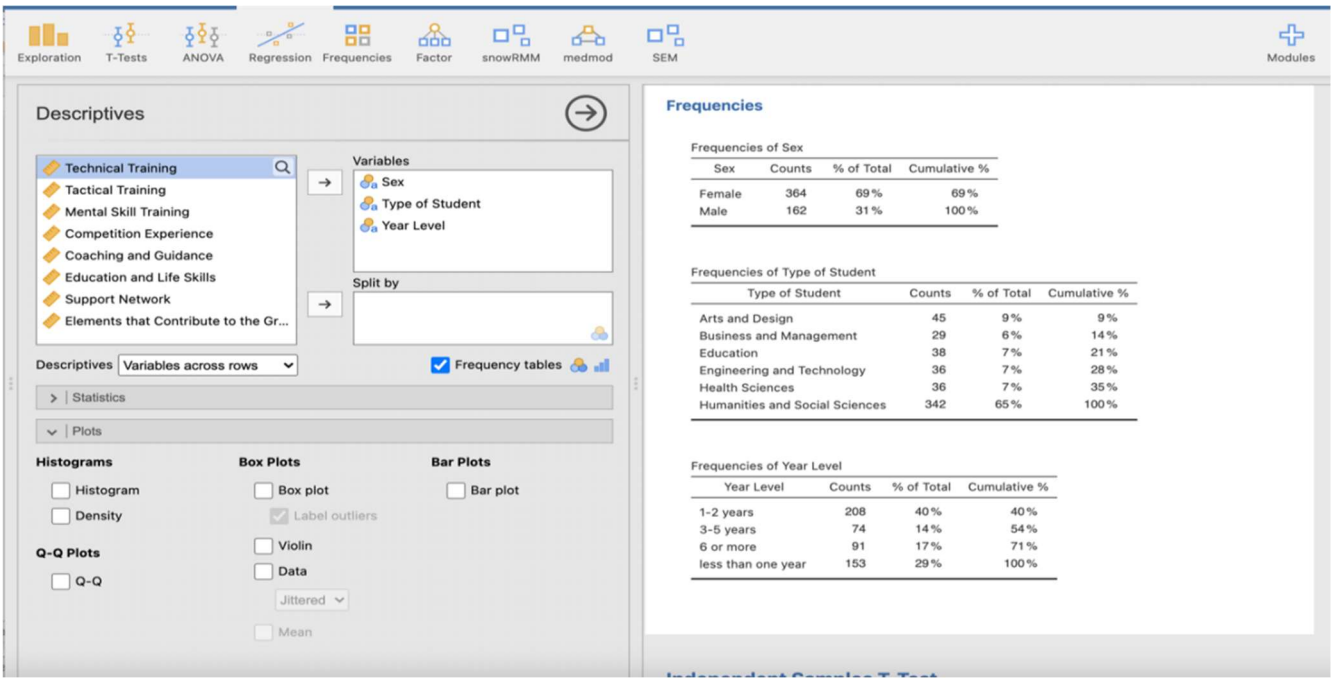

Fig.6 variables

Assessment of the tennis athletes of the elements that contribute to their growth and success

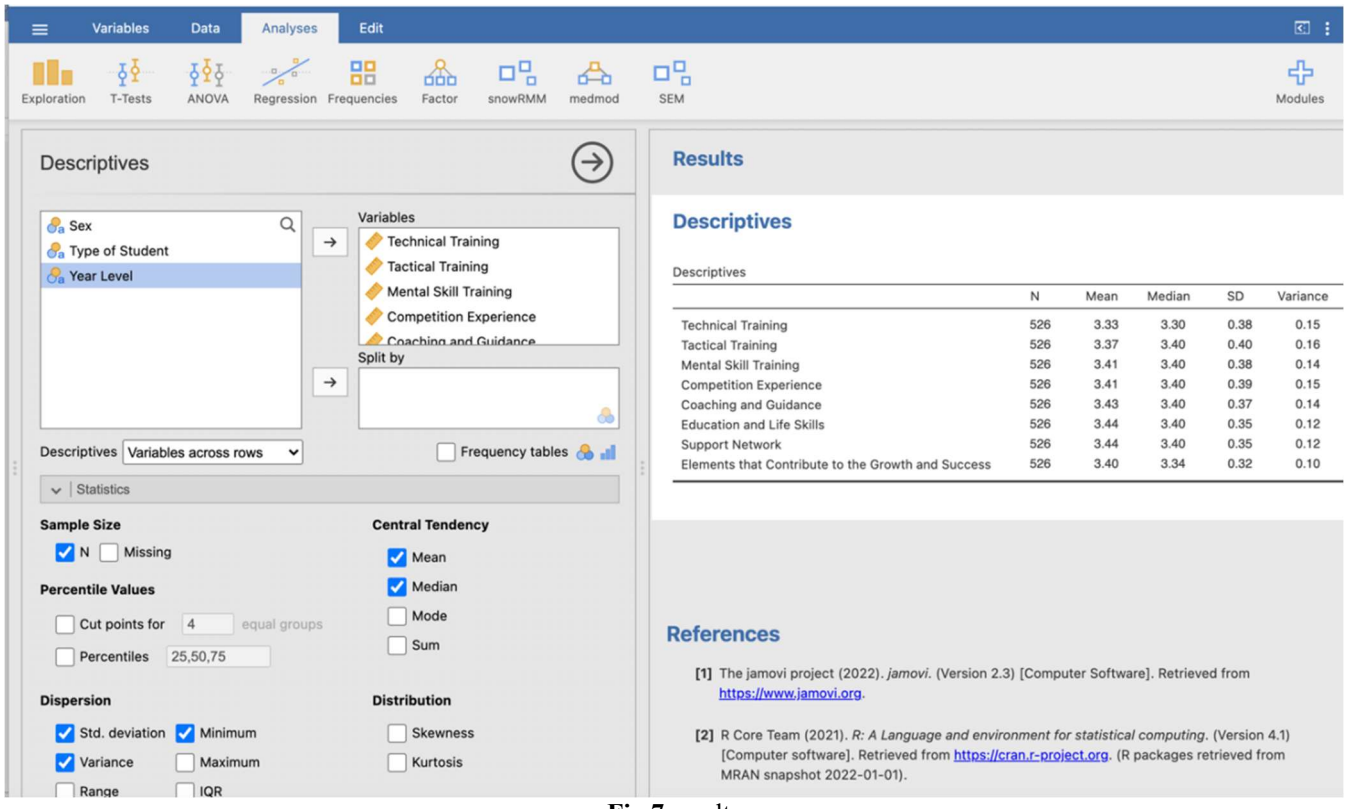

Fig.7 results

Difference in the assessment of the tennis athletes of the elements that contribute to their growth and success

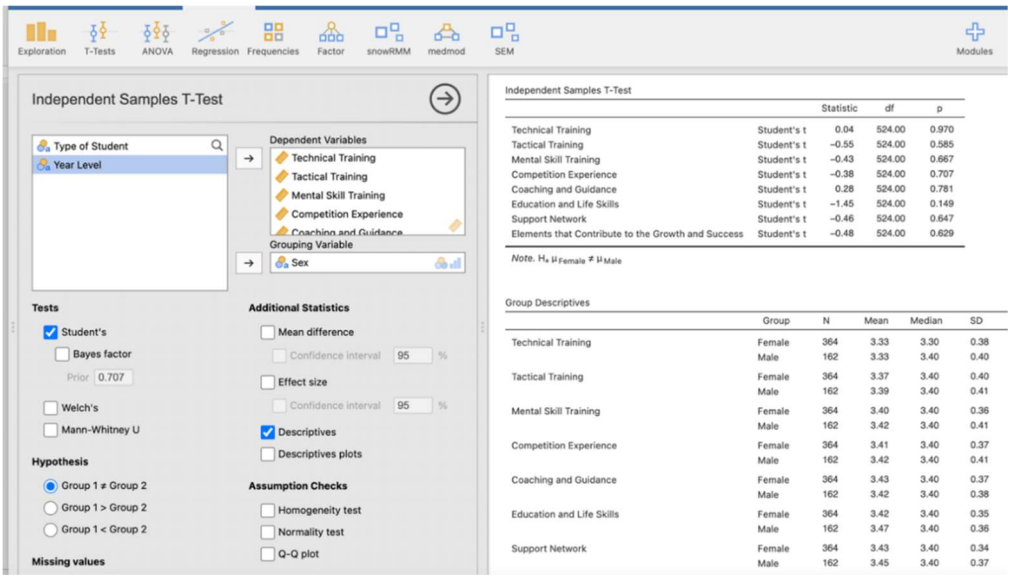

Fig.8 dependent variable

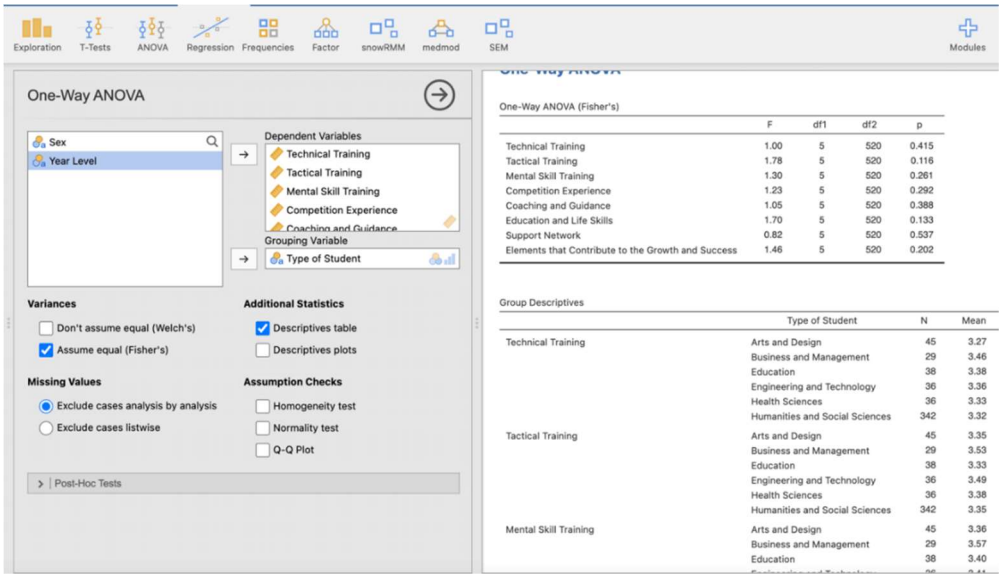

Fig.9 one-way ANOVA (1)

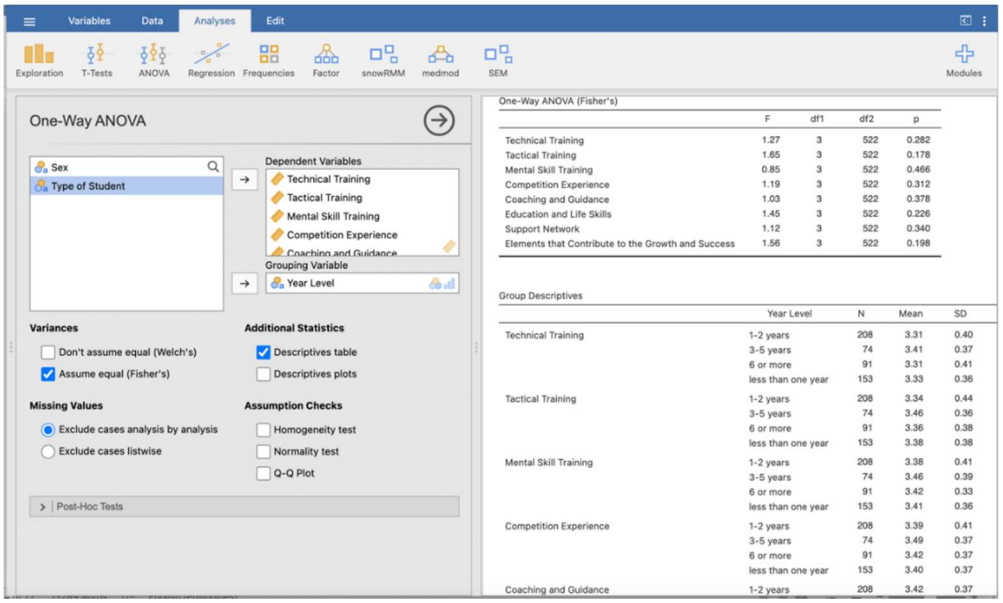

Fig.10 one-way ANOVA (2)