



ARIZONA COLLEGE OF PODIATRIC MEDICINE



An Investigation of Pointe Shoe Fit Principles Among the Elite Level and Recommendations for a Standardized Protocol

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ABSTRACT

Purpose: Dancing en pointe places great demands on adolescents' well-being. Research has proven the prevalence of lower extremity injury among this susceptible population. The proper fit of pointe shoes is essential for performance success and safety as they transition their training. Currently, there is no standard for evaluating pointe shoe fit. The purpose of this study was to examine what factors are valued when fitting dancers in pointe shoes in the elite ballet world.

Methodology: A survey examined the criteria and assessments used to determine proper pointe shoe fit for young dancers among twenty-two elite dance companies in the United States. The Dance Magazine's 2023-2024 Pre-Professional Program Guide was used to select programs. This study was limited to professional institutions.

Results: 81% of programs provide an introduction course on what to look for during a pointe shoe fitting. Crucial qualities of a fitter included their experience, knowledge of different pointe shoes, and awareness of the student's strength. Instructors tend to examine if the dancer can stand up straight in the shoe, shank strength, stability, alignment, and proper overall fit as their foot develops.

Conclusion: There is no protocol on pointe shoe fit at the elite level. Nevertheless, the heightened risk for injury among dancers stresses the vitality that their shoes are suited appropriately. Enforcement and education of students and instructors about proper shoe fit as the dancer transitions to increased demand will enhance their performance, minimize injury, and prevent extended treatment or surgeries in the future. The ballet community is a significant component of sports medicine that needs to address foot and ankle concerns.

INTRODUCTION

Ballet is an intricate art form which combines aesthetics and athleticism. This demanding kind of movement requires great strength, dedication, and artistry pushing one's body to its limits over rigorous training schedules. Most dancers in the United States begin the challenge of pointe work, the magnificent "ability to defy gravity", or dancing on the tips of the toes on average at 11-12 years old. Yet, this range can be as young as 5-6 in South Africa and other parts of the world.¹³ Pointe shoes are an integral part of professional ballet and have barely changed since their development more than hundreds of years ago. Instead of the normal flat ballet slipper, pointe shoes has a rigid vamp, toe box, and stiff shank. These aspects permit the dancer to obtain maximal plantarflexion at the ankle and tarsal joints, hold the dorsum of the forefoot in line with the anterior tibia, and stay up on her toes in the toe box of the shoe.¹⁸ Despite this, the materials required for such a durable shoe have low shock absorbent qualities, heightening the forces on their delicate foot structures compared to a flat shoe.

Pointe work is more than just balancing on ones toes, it is a vigorous art form that balances forces, artistry, protection, and health care. Specifically, dancing en pointe places immense demands on adolescents' overall well-being in a period where their body is still developing, with up to 12 times their body weight on the tinny tips of their toes.¹ Notably, growth spurts during this pubescent time period has been shown to be a physiological risk factor for overuse injuries.¹ Research has proven the prevalence of lower extremity injury among this susceptible population, with 32% to 54% of all injuries being of the foot and ankle.⁶

The proper fit of pointe shoes is essential for performance success and safety as they transition their training. Currently, there is no standard for evaluating pointe shoe fit. The purpose of this study was to examine what factors are valued when fitting dancers in pointe shoes in the elite ballet world.

REFERENCES

References available upon request.

POINTE SHOE ANATOMY

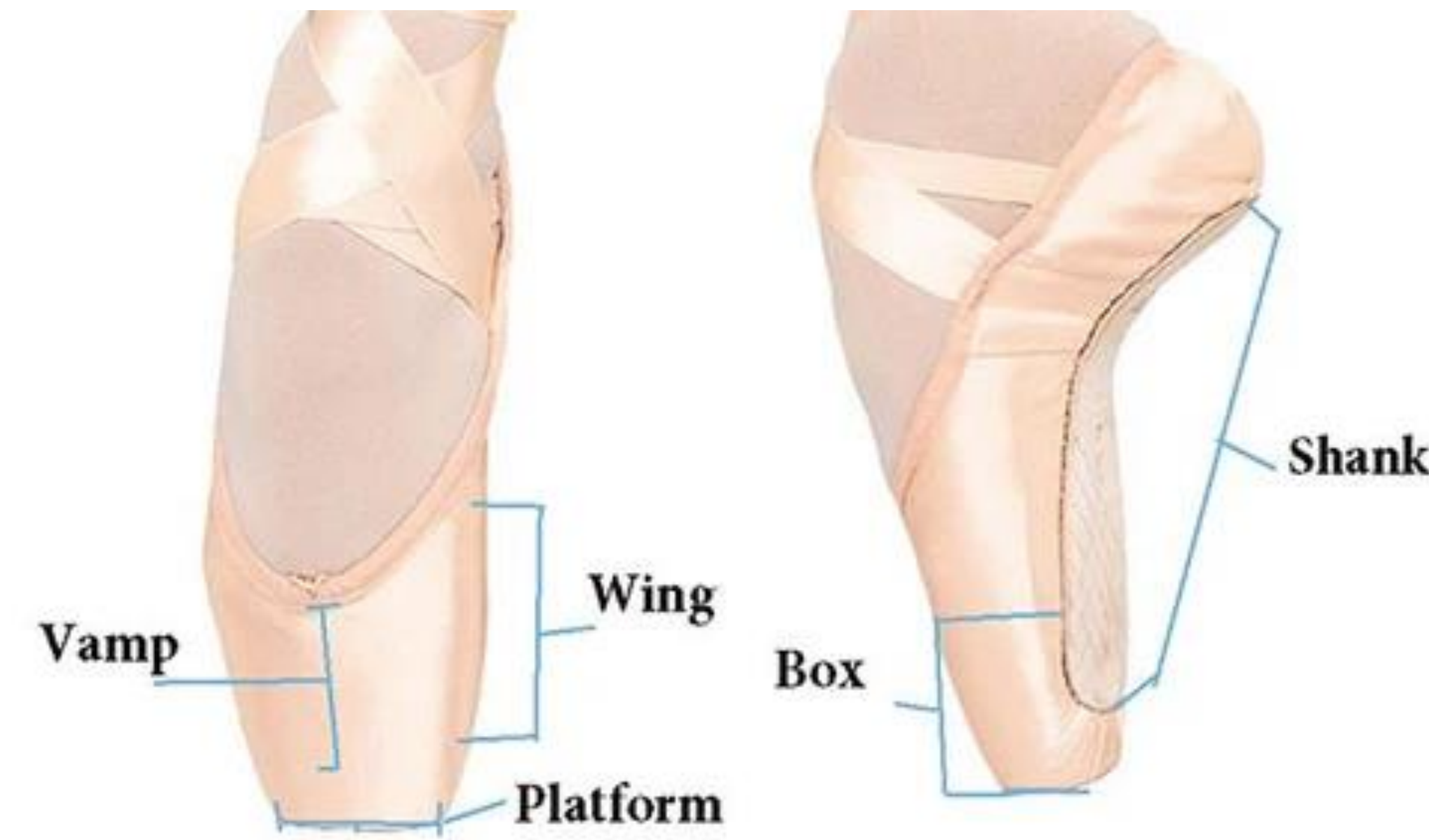


Figure 1: This image shows the characteristics of a pointe shoe. These are constructed with great rigidity and stiffness to aid in supporting the dancer's toes in the box. Consequentially, they are not designed to absorb shock placing immense force on the dancer's foot structures.¹⁸

POINTE SHOE FITTING RECOMMENDATIONS

Does Your Institution Recommend That Students Go To a Specific Pointe Shoe Fitter?

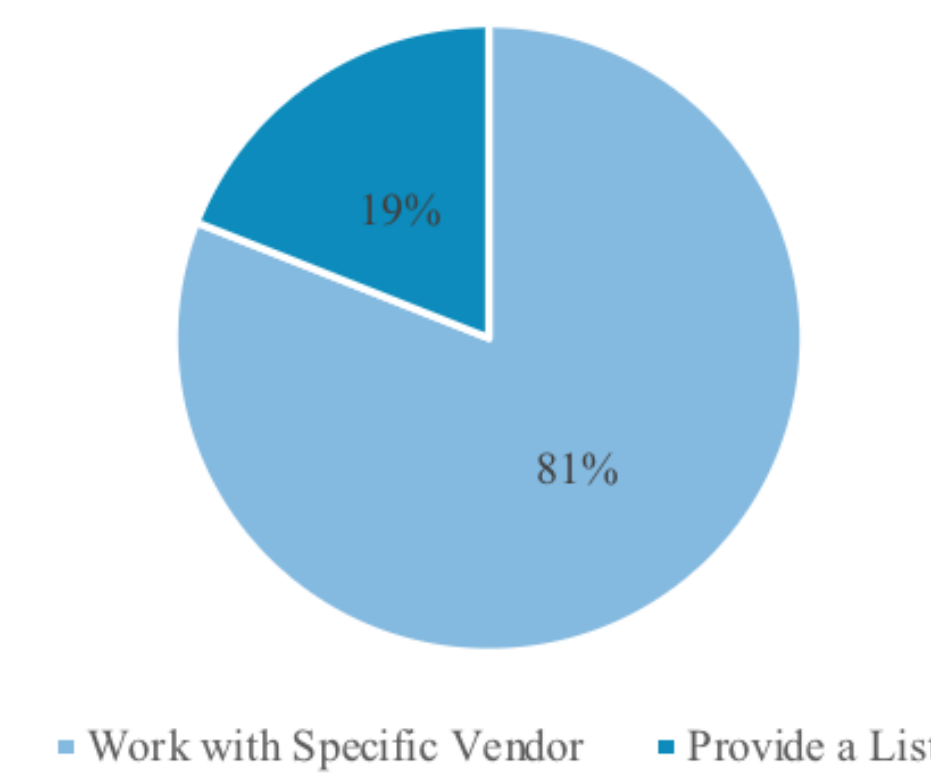


Figure 2: A large majority of respondents indicated that they recommend a specific fitter for their students. This working relationship allows for more consistent and safer shoe fit.

Do You Provide an Introductory Course on What to Look For During a Pointe Shoe Fitting?

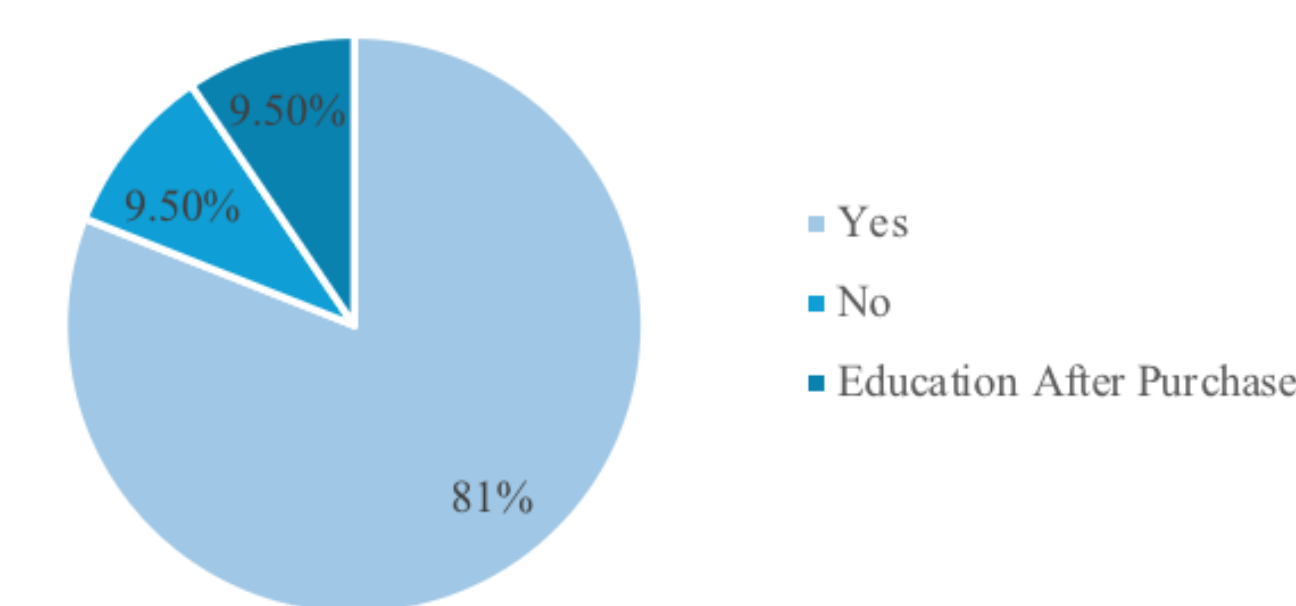


Figure 3: Most elite programs offer their students a course on the basics of pointe shoe fit. This allows students to be more aware and involved in the fit of their shoe.

Is it Common for Your Students to Remain with the Same Pointe Shoe Fitter?

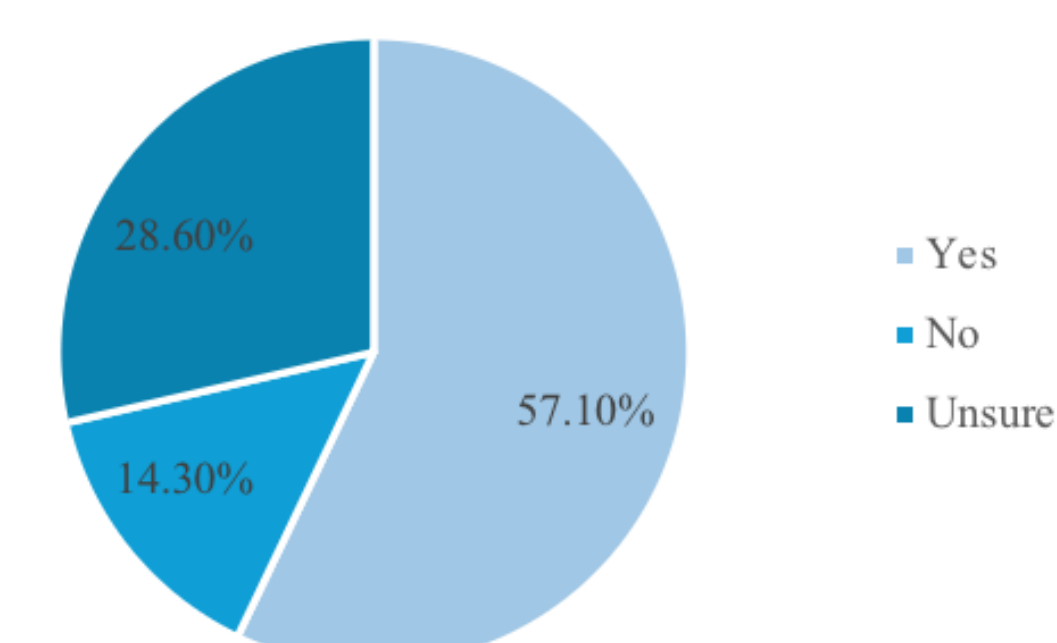


Figure 4: About half the institutions that were surveyed state that their students usually stay with the same fitter and develop a working relationship. This helps maintain better shoe fit as the dancer grows and their needs evolve.

METHODOLOGY

Twenty-two elite dance companies across the United States completed a survey via the RedCap Survey Tool to examine the criteria and assessments used to determine proper pointe shoe fit for young dancers. The Dance Magazine's 2023-2024 Pre-Professional Program Guide was used to select programs. This study was limited to professional institutions only. Multiple choice and open-ended questions were used.

FITTER QUALIFICATIONS

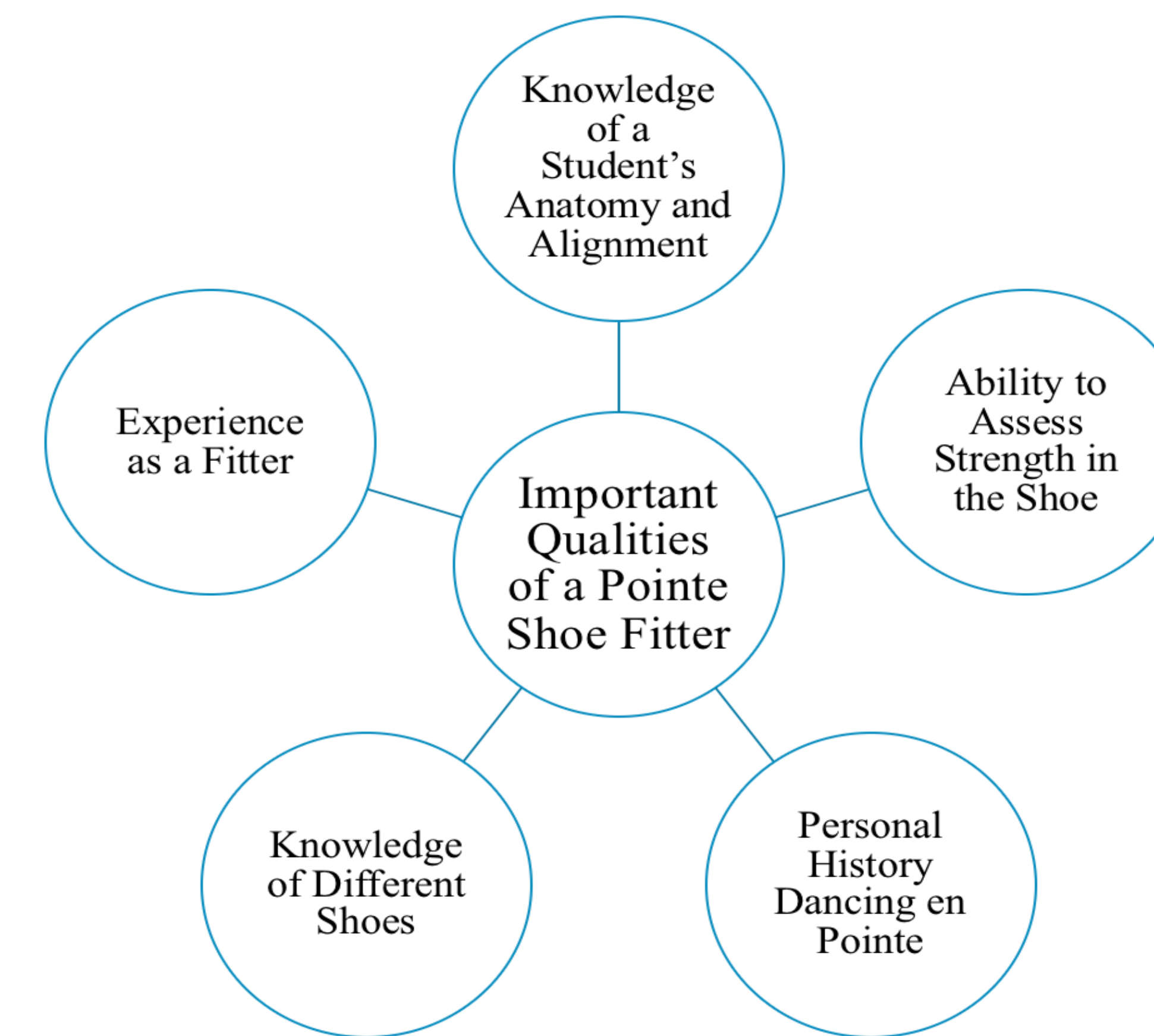


Figure 5: Participants were asked to identify traits they feel are important in a professional pointe shoe fitter. These five traits were consistently highlighted as important.

PERTINENT FINDINGS

- Some studios have an instructor or principal dancer attend the student's first fitting.
- It is not uncommon for a dancer to change brands after receiving their first pair of pointe shoes.
- Monitoring the shoe for signs of decreased support in the shank and/or box is an important way to assess the shoe's functionality.
- The alignment of the toes should be assessed both flat in the shoe and en pointe.
- The shoes will wear down over time in the platform, shank, and wings, and this timeline should be considered.

What instructors use to determine if a student's first pair of pointe shoes are safe:

- Can the student get up in the correct position?
- Does the shoe twist?
- Is the student fitting in the shoe now, not something to grow into?
- Is the shank strong enough to support their specific arch type?
- How do the toes lay when the foot is flat in the shoe versus en pointe?
- Is the student able to break them in?
- Are there any gaps around the shoe?
- Can the student control the shoe and keep its alignment?

A special thanks to all the participants who took the time to complete our survey. Thank you to Charlotte Bloch and those of Midwestern Statistics Department for their contribution to analyzing the data.

DISCUSSION

Proper pointe shoe fit is essential to support young dancers in their training and prevent injury. Elite ballet institutions have noted the following vital qualities of a fitter: experience, knowledge of different pointe shoes, and awareness of the student's strength. In conjunction, instructors tend to examine a dancer's ability to stand up straight in the shoe, shank strength, stability, alignment, and proper overall fit.

During this critical period of development as a young dancer is growing, their anatomy is changing, and it needs to be understood that their initial pointe shoes will most likely not always be the proper fit. Pointe shoes will naturally wear down, and it needs to be assessed whether this was due to outgrowing the shoe/improper fit, or the typical breakdown from use. At this time, the instructors should evaluate if a change to the shoe is needed such as a stronger shank, wider box, different brand, etc. Overall, the fit of each pair of pointe shoes needs to be evaluated to support their demands at the current time.

Combining this data with previous research, the authors propose the following aspects should be considered standard for evaluating proper pointe shoe fit.

1. The toes can lay straight and aligned when the shoe is flat on the floor and en pointe.
2. There are no gaps around the vamp, sides of the shoe, or heel.
3. The student can control the shoe.
4. The student can properly rise en pointe in the correct position, holding their foot in the center of the box.
5. The shank provides enough support for their arch type and does not break too low or high.
6. As the student trains in the shoe, it should show normal signs of wear, with no accelerated loss of support in specific areas.
7. Once the shoe has completely worn, the instructor and/or fitter needs to assess what changes could be needed to the length, strength of shank, width of platform, etc. to the student's anatomy at that time.

CONCLUSIONS

A dancer's transition en pointe is a multifactorial decision that can have multiple long-term implications if started prematurely. While these factors include adequate strength, flexibility, alignment, and technique, an important, yet often overlooked, component is the fit of the pointe shoe. Elite dance programs have access to professional pointe shoe fitters, who use their knowledge to ensure the dancer has the best fit possible. This resource may not be available for recreational dance studios or at local dance supply stores. Knowing the considerations elite dance companies use when evaluating a fitter and shoe fit on a new dancer, young recreational dancers can be more educated and involved in their fitting experience. With lower extremity injuries being most prevalent injury type seen in dancers, proper pointe shoe fit is a simple modification that can be made to greatly improve dancer's safety and well-being.

FUTURE STUDIES

Further studies should continue evaluating the examinations and criteria for the proper fit of pointe shoes. Additional research could be done in outside of the United States and include all levels of studios. The opinions of medical professionals should also be considered, as pointe shoes contribute to injury which requires their treatment. Additional studies examining the durability and unique wear and tear of pointe shoes as they're worn should be conducted to advance the understanding of the forces involved. The results obtained from this future research would aid in developing a set guideline and assessment tool for standardizing the proper pointe shoe fit.