

# Improving Pelvic Alignment

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The dance community places a high level of importance on proper alignment, which provides a basic building block for achieving the aesthetic line and form required for success in the field. Teachers and researchers alike recognize pelvic alignment as the cornerstone of overall skeletal alignment. Proper or neutral pelvic alignment allows for efficient execution of movements—such as external rotation from the hip joint—and effective muscle recruitment.<sup>1,2,8</sup> Numerous studies have been conducted exploring ways to identify and improve pelvic alignment in dancers.<sup>3-7</sup>

Neutral alignment can be defined simply as balancing the pelvis on the heads of the femurs.<sup>1</sup> However, this concept can be vague at best when teaching dancers with varying body types. The research indicates that neutral pelvic alignment is different for each dancer, and is highly variable from day to day.<sup>3,7</sup> Despite this, defining and aligning specific bony landmarks on the pelvis can be a useful tool for dancers and teachers. Two generally accepted alignments include:

- On the vertical plane, aligning the two front hip bones (anterior superior iliac spines) with the pubic bone.<sup>9</sup>
- On the horizontal plane, with the lumbar spine in

neutral, aligning the anterior superior iliac spines within a few degrees of the posterior superior iliac spines (best identified by the two “dimples” located on either side of the sacrum).<sup>2</sup>

Because bony landmarks also vary from dancer to dancer, these should serve as a starting point from which to begin investigation into finding the neutral alignment that best serves each individual dancer.

Deviations from a neutral pelvis can be defined as anterior tilt (allowing the tail bone to flare backward) and posterior tilt (tucking the tail bone under).<sup>2,3,5,7,9</sup> Though both deviations are common among dancers, anterior pelvic tilt has become a common and often accepted technique fault among ballet dancers. The traditional approach of addressing the misalignment in technique class does not always serve to decrease it.<sup>3,7</sup> Furthermore, miscuing dancers to squeeze their gluteal muscles as per classical ballet convention may only lead to overdeveloped gluteal muscles. Dancers with anterior pelvic tilt may also suffer from tight hip flexors and lower back pain. The answer to how best to decrease anterior pelvic tilt and effectively recruit muscles is multifaceted and individualized to each dancer. Several studies have found success with the use of Pilates-based

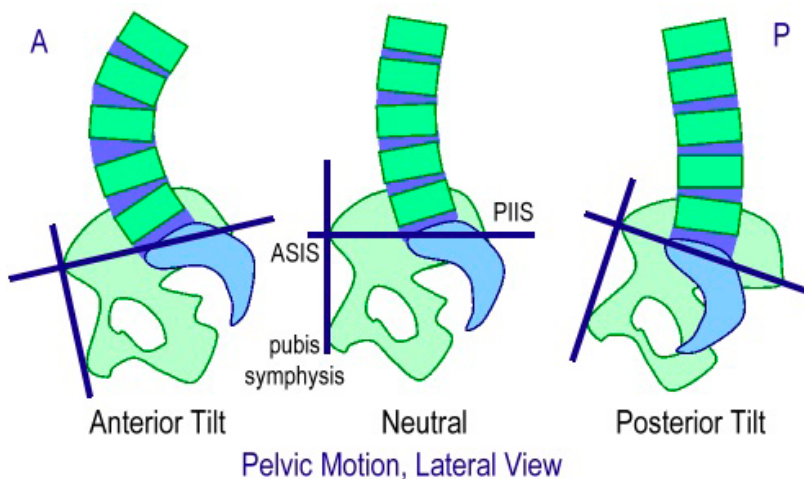


Figure 1. Alignment Diagram

and Somatics-based exercises.<sup>3-5,7</sup>

The major focus of our research was identifying and decreasing anterior pelvic tilt in three university ballet majors through individual tutoring sessions. Each dancer received six hours of tutoring over a three-week period.<sup>7</sup> The dancers were female, between 17 and 19 years of age, and displayed a high level of anterior pelvic tilt. They had been consciously struggling with it, but did not know how to fix the problem.

During the six tutoring sessions the dancers were:

- Provided with a short anatomy lesson using a pelvic model as a visual aide to explain neutral alignment;
- Taught a series of Pilates and pre-Pilates exercises, which focused on the abdominal and lower back muscles, hip flexors, quadriceps, and deep hip rotators;
- Coached through simple ballet exercises, emphasizing neutral alignment and proper muscle recruitment, focusing specifically on using the deep rotators and inner thigh muscles while engaging the abdominal muscles to bring the pelvis toward neutral;
- Taught several relaxation exercises to reduce muscle tension;
- Encouraged to use this information in their daily technique class and to ask questions.

The major focus of the tutoring sessions was increasing awareness and motor control, and developing good alignment habits to promote lasting improvements. The results of the study indicate that following intervention each of the dancers decreased their degree of anterior pelvic tilt by an average of 3.5 degrees. Through a simple tutoring program these dancers were able to improve their pelvic alignment and gain a greater understanding of what was necessary for maintaining this alignment.

Research based conclusions regarding pelvic alignment:

- Technique class alone does not always improve pelvic alignment.
- The addition of Pilates-based and Somatics-based exercises leads to improvement in some individuals.
- Pelvic alignment is highly variable and changes from day to day for each dancer.
- Neutral pelvic alignment is different for each dancer.
- Improvements in pelvic alignment can occur in a very short period of time as a result of improved awareness, muscle recruitment, and motor control.

Teacher's guide to improving pelvic alignment:

1. Visually identify dancers needing remediation
  - Screen dancers specifically for pelvic alignment. Barre work often provides the optimal sustained positioning for visual assessment.
  - Once identified, continue observation of dancers during varied exercises and multiple lessons.
2. Provide identified dancers with feedback on proper pelvic positioning and "problem movements" specific to each. Include discussion of underlying anatomy, with skeleton demonstration if available. The key is to make this an individualized discussion,

encourage questions, and take a hands-on approach to helping the student find a neutral pelvic alignment.

3. Continue to observe targeted dancers for improvement following basic feedback. If dancers are still in need of improvement, integrate the following exercises into the dancer's daily routine:
  - Increase abdominal strength; strong abdominals provide support for finding and maintaining a neutral pelvis.
  - Stretch hip flexors, if they have become excessively tight from years of anterior pelvic tilt. Stretching them on a daily basis will allow the pelvis to settle into a more neutral position.
  - "Pelvic clock" provides a first step toward improvement by increasing awareness of pelvic alignment: Lying on your back with knees bent and feet on the floor, tip the pelvis through full range of motion, starting at 12 o'clock with the navel and lower back pressed to the floor and moving through to 6 o'clock as the waist rises off the floor and the tailbone is the only part of the spine contacting the floor. Make certain not to miss any point of the clock, and repeat in a counterclockwise circle. This exercise forces you to explore the full range of motion available in the pelvis and find a neutral pelvic alignment.

### *Acknowledgment*

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