
Improving Dancer Turnout

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This article is based on a within-subject experimental analysis¹ of a training approach designed to improve dancers' ability to use and control turnout effectively. In this article, we describe the essential features of the study and emphasize the practical implications for dancers and teachers. A high degree of turnout is desired by many dancers. Turnout is external rotation of the legs from the hip joints causing the entire leg to turn outward, away from the center of the body. Researchers have shown that contributions to turnout are made at several points between the hip and the floor² but practitioners seem to agree that emphasis should be on externally rotating the thigh bone (femur) in the hip socket (acetabulum). Well-controlled turnout facilitates: the efficient transfer of weight from one leg to the other; allows for greater extension and control at the hips; satisfies the aesthetic for classical dance forms and may reduce dancers' risk of injury.³⁻⁵ Although using turnout effectively is an essential factor in many dancers' careers, dancers are frequently uncertain how much turnout to use or how to use it properly.³

Some authorities say that "perfect" turnout is 180° of external rotation across both legs but it is rare for dancers to be able to manage this degree of turnout without compensations.⁶ Regardless of the degree of turnout that a particular dancer's structure can manage, developing the ability to control the degree of turnout that his or her body can accommodate safely is a sought after objective in a dancer's career.³ Six deep muscles of the hip (piriformis, obturator internus, obturator externus, gemellus inferior, gemellus superior, and quadratus femoris) are well positioned to externally rotate the hip joints without causing compensatory actions in surrounding muscles and joints. It is important for dancers to understand that the force to create turnout should come largely from these muscles working in syn-

ergy with other muscles at the hip joints rather than from forcing their feet to the side.³ Dancers whose anatomy and skillfulness are insufficient to manage the extreme degree of turnout used in some theatrical dance forms (e.g., classical ballet) are prone to compensate and, therefore, put their bodies at unnecessary risk for misaligned postures; bony changes; degenerative joint disorders; decreased lower extremity strength and even emotional problems.^{3,4,7}

Several authors have suggested that control of turnout is probably more important than overall range of motion, implying that the emphasis in turnout training might profitably be placed on improving strength instead of or in addition to increasing range of motion.^{3,6} Clippinger suggested that turnout training be aimed at building awareness, coordination, and strength in the deep outward rotators.⁸ In addition, Daniels suggested that "since many dancers are visual, kinesthetic, and spatial learners, it is important to address multiple learning styles by using anatomical drawings, model skeletons, somatic awareness exercises, palpation, hands-on guidance, imagery, and verbal cues."⁵ The purpose of the study we are summarizing was to evaluate the effectiveness of an approach to turnout training designed to satisfy these guidelines.

Method

Six first-year, female university dance majors who, based on prior screening assessments, showed a potential for improving their use of turnout were invited to participate in the study. The participating dancers were typical of first-year dancers in the highly-selective program where we conducted the study. All were likely 18 to 20 years of age with 5 to 15 years of previous dance experience. None of the dancers had current injuries that limited their participation in dance. We studied university dancers because we had ready access to them in a setting where we could conduct the training experiment.

Turnout Training

The dancers met with a trainer (first author) in pairs for 45 minutes immediately before their morning technique

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classes for 10 consecutive class days (2.5 weeks; technique classes did not meet on Wednesdays). Each day, the trainer led the dancers through a series of exercises that had been chosen in advance based on recommendations by various experts in the field and based on the apparent effectiveness of the exercises during pilot testing with a different group of dancers a year earlier. During the training sessions, the trainer gave sensation-based cues, presented images of the anatomical structure of the hip, and provided brief lessons on the mechanics of turnout using a teaching skeleton.^{3,5,9} The trainer increased resistance and repetitions as the dancers' bodies were ready to accommodate additional challenge. All dancers performed the same exercises but by working in small groups, the trainer was able to offer minor modifications and imagery to match each dancer's individual needs. The within-subject experimental design used for the study can accommodate some individualization by using each dancer as her own experimental control.¹

The turnout control exercises are described in Table 1 as they were presented to the dancers.

Following training, the dancers were encouraged to continue performing the exercises on their own and asked to keep a record of their work on a written log sheet provided by the trainer.

Assessments

The influence of the training procedures was evaluated with three types of assessments. For the primary assessment, we measured total active turnout, the degree to which dancers were able to externally rotate their legs from the hips down while standing on friction-reducing discs (Fig. 1).^{4,13} A member of the research team made sure that the dancers maintained neutral alignment at the pelvis (no anterior or posterior tilt) and the feet and ankles (no pronation or supination) as they performed this action.

For each dancer, total active turnout was assessed once

Table 1 Turnout Control Exercises

Exercise	Description
Awareness	Lie supine with legs in parallel and begin rotating the legs to first position. Feel the rotation happening from the deep rotator muscles, not the legs or the feet. After rotating to first position and back to parallel 3 times, you should feel activation in your deep outward rotator muscles. To increase the sensation, try having someone hold your ankles as you rotate. Repeat the exercise standing and allow the rotation to bring you to rise while placing your hands on your core. Think of the stripes on a candy cane wrapping around the inside of your thighs or the seams of your tights coming together in the back. ⁵
Gyro Butterfly/ Clam	Lie supine with soles of the feet touching each other and hands placed on the outside of each knee. Rotate one leg inward until the knee is on top of the other knee, and open it again using your hands while keeping the other knee on the floor as long as you can. Once the other knee can no longer stay on the floor, let it rotate in. Alternate the leg that opens. Repeat opening 16 times at a brisk pace. Repeat the exercise sitting. ⁹
Passé Press	Lie on your side with correct alignment. Engage your core and keep the bottom leg turned out as you bring the top leg up to passé and press it into a partner's hand. Squeeze for 3 counts and release for 3 counts. ¹⁰ Repeat 4 times on each side. Gradually, increase repetitions to 8 times on each side. ¹⁰ Add a développé to second position making sure to keep the rotators working, the core stable, and the hips stacked on top of one another. Try to balance. Then stand up and perform passé position on both sides placing a finger on the greater trochanter, feeling it drop down and under. ⁵ Find the same sensation you felt on the floor. In center, add a développé to second position, ronds de jambe to rotate on quarter turns, and a rise.
Rotating Side Lunge	Hold on to a barre while in very deep second position plié. Shift most of your weight to one leg while holding your pelvis forward, rotate the gesture leg outward and return without losing turnout of the standing leg or letting the pelvis move away from the barre or sink toward the floor. Repeat 3 times on each side. Increase repetitions to 6 times on each side. ¹¹
Attitude on Disc	Stand in first position facing the barre on a pair of 9" rotational discs. Maintain maximum turnout on supporting leg while moving the gesturing leg from coupé to attitude derrière 6 times on each side. Make sure the gesturing leg moves straight behind you and the knee is always pressing outward. Then perform 6 relevés with one leg in coupé keeping the full rotation on both legs. On the last relevé, stay on rise and move the gesturing leg from coupé to attitude 6 times. Finally, step away from the barre and perform passé to back attitude and then passé to front attitude on both sides, feeling the same sensation felt on the disks and keeping the hips square. ¹⁰
Stretch	Stretch the hip rotators and extensors by putting the inside leg in front attitude on the barre and twisting the body towards the gesture leg making sure to relax in the hip flexors and to keep the hips square. Hold and repeat as needed. Stretch more of the deep rotators in the seated "pretzel" position ¹² making sure to lift up and relax in the crease of the hips. Stretch the hip flexors with the hip flexor lunge. ¹² To take this stretch out of the quadriceps and into the hip flexors, scoop in the front of the pelvis. To intensify this stretch, put the back shin against a wall, shifting your weight forward to minimize pressure on the patella.
Cool Down	Lie supine with a pinky or tennis ball under your deep rotator muscles. Relax into the ball as you roll over it for 1 minute.



Figure 1 Total active turnout measurements were made following daily technique classes. Dancers stood on friction-reducing disks to offer their “best turnout” while maintaining neutral alignment at the feet and pelvis. The researcher later used an online graphics tool to measure the angle between the bottoms on the dancers’ feet (center of each heel to the base of the second toe). The marks on the dancers’ feet do not appear to align with the lines on the steel strips due to a small parallax effect.

per day, four days a week, for nine consecutive weeks. The measurements were made immediately following three hours of morning technique classes. Thirty-five measurements were made for each dancer over the nine weeks the study was being conducted.

In addition to the objective measurement above, we conducted a functional assessment of the dancers’ ability to control turnout while performing an adagio phrase. The phrase was designed to challenge the dancers’ ability to control turnout. Dancers were videotaped performing the phrase before and after they participated in the turnout training. Before each performance, the primary investigator instructed each dancer to perform the phrase as they would in a ballet class. Three dance teachers who were pursuing graduate degrees in dance performance and choreography (but not teaching the dancers in this study) judged the videotaped performances for each dancer by rating the dancer’s ability to control turnout, overall alignment, and artistic expression while performing the phrase. We randomized the order of the recordings so the judges would not know which recording was made before and which was made after training.

The third assessment involved asking the dancers to respond to three questions on a written questionnaire with a rating between 7 (high) and 1 (low):

1. How important is it for dancers to improve their use of turnout?
2. How appropriate were the exercises given in the turnout training sessions?
3. Were the gains achieved with training worth the investment you made?

The dancers were also invited to offer written comments to explain their ratings.

Results and Discussion

Total active turnout on the rotating discs increased gradually throughout the training period for all six dancers. Turnout across both legs increased an average of 14° , with improvements ranging from 9 to 22° . All of the dancers maintained or further improved their turnout after training concluded. Improvements following training were particularly noticeable for dancers whose self-report logs showed that they continued to practice the exercises. Readers interested in more methodological detail may consult the original research report.

The teachers who viewed the recordings of the adagio phrase made before and after training detected improvements in the dancers’ ability to control turnout throughout the phrase. The differences were clearest for the teacher who had substantial expertise in the body sciences. In the comment section where we invited the judges to explain their ratings, this particular teacher reported seeing profound changes for each dancer. Her comments describe performance differences that dancers and teachers might expect to be associated, directly and indirectly, with improved turnout control:

- “The initiation of the rotation is coming from the back of the legs.”
- “The pelvis looked more stable.”
- “Much less hip hiking.”
- “The torso looked more lengthened.”
- “The chest was more open.”
- “I saw a greater level of confidence.”

This teacher’s ratings identified the “after-training” video as the one showing greater control of turnout for all six dancers, despite not being told which recording for each dancer was made before and after training.

The two teachers who had less experience in the body sciences did not identify similar differences in the dancers’ before and after training performances and they were able to identify which performance was recorded before and which was recorded after training in only half of the dancers. This combination of results makes us wonder whether the ability to detect effective control of turnout is a skill that can be developed with specialized training. Future research might be designed to determine whether specialized training might allow teachers to see differences in dancer performance that can enhance training effectiveness.

In the evaluations, we collected from the dancers at the end of the study, all dancers gave high ratings to the importance of improving turnout (all circled the highest rating, 7), the appropriateness of the training procedures (all circled 7), and the value of the gains achieved relative to the time and effort they invested (all circled 6 or 7). Their written comments suggested that they were more aware of their hip outward rotator muscles when taking technique classes, which allowed them to perceive better balance, greater stability and correct alignment. One dancer explained that by becoming more aware of and by strengthening the hip rotator muscles, she noticed that she no longer lifted her hips or tilted her pelvis. Other dancers reported an increase

in core strength and a decreased tendency to pronate at the feet. Dancer 6 wrote: “I am definitely more aware of the muscles I need to use and how to engage them more effectively. However, it will take continued training and mental focus on my part to really reap the greatest benefit.”

Implications and Future Research

The results of the study suggest that university dancers can improve their turnout control in a one-teacher-with-two-dancers training environment using a 10-day, 45-minute targeted training program delivered before technique classes. Whether similar benefits can be achieved with dancers in other contexts remains to be demonstrated. Our non-experimental work with younger dancers at summer workshops is encouraging. Assessing whether improvements achieved with this type of training environment will generalize to technique classes is a focus of our current research efforts.

The exercises tested in this study were selected by the first author based on her experience as a dancer, writings by dance training experts, and recommendations by the university dance program's physical therapist. It is possible that other combinations of exercises could be used with similar effects if they are administered in the intensive manner described in this study. Additional research will be needed to answer this question. Future research might also be designed to evaluate whether a longer training duration might produce greater improvements in dancers' ability to use turnout effectively. Finally, assessing the effects of experience in the dance sciences on dance teachers' ability to teach technical skills, such as effective control of turnout, may also be a fruitful topic for future research.

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