

Gait Deviation – Verbal Cueing Intervention – Side Effects

Gait Deviation	If Intervention	Then Side Effects of Intervention
Limp	See, feel the limp, "try not to do that" Take long even steps Visualize smooth symmetric walk/run Spend more time on weak leg Swing your arms	↑ Pain ↑ Energy expenditure
Slow	Walk faster Take more steps per minute Step to the beat of the music at or > 120 beats/minute Walk with spring in your step	↑ Energy expenditure
↑ Up/Down	Keep book on top of head Laser light on target in front on wall	↑ Knee, ankle soreness Cognitive overload ↑ Energy Expenditure
↓ Up/Down	Walk with spring in your step Walk & peer over the crown in front you Propel up and forward from ankle Laser light on target in front on wall	↑ Knee, ankle soreness Calf muscle Achilles' soreness Discomfort in ball of feet
Long Step	Imagine visualize stepping on every railroad tile Walk like a stalking animal Walk like you are walking on hot sand Listen to sound of foot strike, walk quieter, sneak up on someone Shorter steps more steps/min Use selfie video for feedback Faster cadence ↑ 5% Metronome, music at appropriate beats/minute Use wearable measuring cadence with either audio or vibratory feedback	Cognitive overload ↑ Energy Expenditure ↑ ankle dorsiflexion in terminal stance
Short step	Visualize stepping on every <i>other</i> railroad tile Tape markers on ground/treadmill belt Laser light target with walker, cane, or shoes	Cognitive overload ↑ energy expenditure

	<p>Take longer steps Slower cadence ↓5% Strike heel, squeaker gait wearable</p>	
↑ Foot Angle relative to ground	<p>Visualize stepping on every railroad tile Shorter steps more steps/min Faster cadence ↑5% Metronome, music at appropriate beats/minute</p>	<p>Cognitive overload ↑ Energy Expenditure</p>
Toe Out	<p>Imagine visualize foot is front car tire, keep it straight down road Push heel outward Listen to verbal cue from therapist, coach, “yes”; “dampen it”; “need more effort”. Fee Align foot with tape on floor, line on road Touch or tap muscles on front of hip self-talk or say out loud use this muscle Flexibility exercises for hip Tibial rotation exercises</p>	<p>Soreness in front of hip ↑ Hip pain ↑ Knee pain ↑ Big toe pain</p>
Toe In	<p>Push heel inward Align foot with tape on floor, line on road Flexibility exercise for hip Tibial rotation exercise.</p>	<p>Buttock soreness ↑ Hip pain ↑ Knee pain ↑ Big toe pain</p>
↑MTPJ-DF	<p>Push big toe into ground keep toes straight Stiff sole shoes with rocker sole Walk visualize leaving imprint in sand under big toe</p>	<p>Hammer toes Fall risk with rocker sole shoes</p>
↓MTPJ-DF	<p>Rocker sole shoes Shoe with stiff sole Increase amount of toe out 1st MTPJ kinetic wedge cutout inserts</p>	<p>Fall risk with rocker sole shoes ↑ big toe pain ↑ knee joint pain</p>
Early Heel Off	<p>Keep heel down longer Visualize walking in sand leave deep imprint under heel Stiff sole shoes with rocker sole Shoe with high drop Wearable squeaker heel</p>	<p>Stretching sensation in calf ↑ ankle dorsiflexion Fatigue in thigh muscle Pinching sensation front of ankle ↑ knee joint soreness</p>

<p>Late Delayed Heel Off</p>	<p>Internal focus of attention: Lift heel off ground sooner See your calf muscle flex & tone See yourself propel up & forward See yourself walk with bounce in your step See yourself prancing as your walk See yourself walk with spring in your step See yourself run like a gazelle When doing "dance step to nowhere" strive to have the involved foot look the same as it looks when the uninvolved foot when the heel is coming off the ground Walk/run so that someone will hear you coming, make sound with foot strike Say with non-vocal self-talk or say out loud the mantra "spring in step" or prance when walking Say with non-vocal self-talk or say out loud "be gazelle" When doing dance step to nowhere, strive to have the same sensation in the involved foot as your feel in the uninvolved foot when the heel is coming off the ground. Feel an increase in pressure in the ball of the foot late in stance Feel squeeze in calf muscle late in stance Feel heel lift off ground sooner Remember the sensation you felt in calf muscle when performing standing heel raise exercise strive for similar sensation in calf muscle when walking/running. Propel up & forward using calf muscle not the buttock muscle Run in place, then run & maintain the same foot strike patterns that is forefoot strike or whole foot strike not a heel strike. External focus of attention: Imaging visualize when walking you are peering over crowd in front of you or you are peering over a high fence</p>	<p>Calf muscle soreness ↑ Energy expenditure Pain ball of foot ↑ fall risk with rocker sole shoes</p>
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	<p>Imagine visualize walking in wet sand or mud & leaving deeper imprint under ball of feet in sand/mud</p> <p>Walk towards mirror watch top of head, increase the amount of up & down motion, see yourself prance</p> <p>Walk/run with shadow from sun in front of you the sun will be behind you watch your head in shadow in front of you, increase the amount of up& down motion of the shadow</p> <p>Laser light line beam attached to lower leg increase height relative to line of horizon.</p> <p>Watch selfie video after walking or running</p> <p>Say out loud the mantra "spring in step" or "prance" when walking</p> <p>Listen to verbal cue from therapist, coach, "yes"; "dampen it"; "need more effort".</p> <p>Fee</p> <p>Elastic tape kinesio tape</p> <p>Walk/run against an elastic band providing backwards pulling force on pelvis to implicitly engage muscle activity needed for propulsion (hip extension ankle plantar flexion).</p> <p>Walk faster by increasing cadence not the step/stride length</p>	
Excessive Pronation	<p>Walk with conscious effort to perform short foot make an arch exercise</p> <p>Visualize walking in wet sand leave imprint with arch</p> <p>Supportive shoe, shoe insert, orthotic</p> <p>Strapping/tape</p> <p>Reverse tandem walking maintain arch</p>	<p>Soreness fatigue in foot</p> <p>Blisters, hammer toes</p> <p>Ankle sprain</p>
Loud foot strike	<p>Walk like a ninja</p> <p>Walk like you are sneaking up on someone</p> <p>Walk/run quiet</p> <p>Watch cup of water in holder on treadmill observe ripples of water & quiet the waves</p>	<p>Cognitive overload</p> <p>↑ Energy expenditure</p> <p>↑ Ankle dorsiflexion in terminal stance</p>
↑ Forward Lean	<p>Keep book on top of head</p> <p>Laser light on target on front wall</p>	

↓ Forward Lean	Keep book on top of head Laser light on target on front wall	
Lateral Pelvic Drop	<p>Internal focus of attention</p> <p>See that the pelvis is level Imagine visualize your pelvis is bucket of water do not let water spill out the side Imagine your kneecap is a head light see the beam of light is pointing straight down the road Imagine your pelvis is a hand bell, quiet the clang of the bell Put your hand on your buttock muscle engage & contract like your felt when performing isometric gluteal exercise when sitting & standing Imagine your buttock muscle is a bike tire fill it with air feel how stiff & supportive the pelvis is</p> <p>External focus of attention:</p> <p>Walk towards mirror look at your belt keep it level Place hands on waist/pelvis watch the undulation movement of elbow keep the undulation small Watch beam of laser light (cat toy) attached on the contralateral pelvis keep it on or close to the line of the horizon Watch beam of laser light (cat toy) on ipsilateral thigh keep it close to line of vertical Listen for foot strike make sound symmetric Keep steady rhythm of steps strides Listen while therapist says use this muscle while touching tapping the ipsilateral gluteal muscle Therapist Listen to verbal cueing from therapist, coach, "Yes", "Dampen it", "Need more effort" Cane in contralateral hand Weight in ipsilateral hand</p>	Cognitive overload ↑ Energy expenditure Gluteal/buttock soreness

	Hip spica brace, adhesive strapping/taping	
Contralateral Pelvic Elevation	Visualize your pelvis is bucket of water do not let water spill out the side Cane in contralateral hand AFO in swing leg Shoe lift in non-affected side	
Lateral Shift COM	Visualize your pelvis is bucket of water do not let water spill out the side of bucket Imagine pelvis is hand bell quiet the clang of the bell Shoe lift on non-affected leg	Gluteal/buttock muscle soreness ↑ Demands hip joint
Daylight	Walk like you wearing diaper Walk toward full-length mirror	↑ demands on hip/pelvis
Popliteal crease	Visualize kneecap is flashlight keep it pointing straight down the road Walk/run mirror in front while on treadmill Laser light point at target De-rotation brace	Cognitive overload Buttock muscle soreness Twisting in spine Lateral knee pain
Xing midline	Keep foot strike to side of line on ground Mirror in front	Cognitive overload ↑ Demands on hip/pelvis
Varus Thrust	Valgus wedge in shoe Unloading brace Cane walking stick Weight in ipsilateral hand Shoe with double rocker sole APOS	Plantar heel foot pain ↑ medial knee pain
Valgus Thrust	Varus wedge in shoe Unloading brace Cane walking stick Weight in ipsilateral hand Shoe with a double rocker sole APOS	Ankle sprain ↑ Lateral knee pain
Medial heel whip – adductory whip	Slippery shoe sole interface with ground Flexibility exercises for hip Tibial rotation exercises Alter flex point in sole of shoe	↑ Risk of falls
Lateral heel whip – abductory whip	Slippery shoe sole interface with ground Flexibility exercises for hip Tibial rotation exercises Alter flex point in sole of shoe	

↓ Base of Support	See that don't do that Visualize a wide foundation Provide foot falls targets	
↑ Base of Support	See that don't do that Walk heel toe Place foot online on floor, treadmill, road Laser light line target	Increased fall risk Slower velocity
Knee hyperextension stance limb	Visualize scaffold around knee Supportive non-elastic or elastic tapping, Swedish knee cage Push off the floor, propel forward	
Sustained hip & knee flexion stance limb	Stay nice & tall Push foot into ground Use cane in contralateral hand	Cognitive overload
Variable foot placement	See that don't do that Aim to place foot on marks on floor Step on marks with packing material for audio feedback Rhythmic auditor cueing with metronome Laser light target therapy	Cognitive overload
Circumduction	See that don't do that Lift leg from hip Imaging lifting foot out of snow or shallow water Walk close to wall do not strike wall, do not lean away from wall Shoe lift on non-affected limb	Tripping, ↑ fall risk Cognitive overload
Vaulting	Leave heel on ground longer Touch thigh of swing leg say "relax the knee" Visualize you are leaving imprint of your heel in wet sand Shoe lift in non-affected leg	Cognitive overload Soreness in calf muscle
↓ hip flexion swing phase	Pick your knee up Laser light target therapy lift light beam above the line of the horizon	Cognitive overload
Foot drop - ↓ dorsiflexion swing phase	AFO orthosis Temporary non elastic AFO Shoe lift in non-affected leg Gait sport shoe squeaker	

