





Supplemental Table 1. Exercise start and end positions, directions and cues for MedX® resistance exercise machines. These same details applied to both traditional machines and the modified machines that provided eccentric overloading stimulus. All exercises were executed with a three-second concentric phase and three-second eccentric phase.

Exercise	Start Position	End Position	Directions and Cues
Leg press			<p>Participants were positioned at approximately 45° of seated incline angle, with feet positioned on the footplate about hip width apart. The knees formed a 90° angle at the start of the exercise. The participant’s back was flat against the seat back and head against the headrest. Participants were instructed to brace the abdominal muscles and cued to a) “push the footplate away using the whole sole of the foot,” and b) “keep the knees in line with the legs”. During the pushing motion, participants exhaled and during the return to start position the participants inhaled. A final cue was to “avoid locking the knees” at the completion of the pushing phase and “keep feet flat on the footplate”.</p>
Knee flexion			<p>Participants sat in the machine with buttocks and back against the seat pad. The seat was positioned to align the knee joint center with the machine’s target rotation axis. The anterior machine arm pad was positioned below the patella and the posterior arm pad was positioned between the Achilles tendon and the calf. Participants were instructed to breathe out with the hamstring contraction and breathe in as the legs returned to the start position.</p>
Knee extension	<p>Participants sat in the machine with their back against the seat</p>		

Chest press



pad. The seat was positioned to align the knee joint center with the machine's target rotation axis. The padded extension was positioned so that the pad was against the tibia. With each extension movement, participants inhaled and as the legs were lowered to the start position, the participant breathed out. A cue was to "avoid locking the knees" at the completion of the extension phase.

Participants were asked to be seated at a height at which the arms would be pushing the handlebars at mid chest level. At full arm extension, the handlebars should have a fist width distance between them. Participants were instructed to breathe out as the arms pushed the weight forward and breathe in when the arms were drawn back to the body.

Seated row



Participants were seated with the chest against the front seat support with a straight back and feet planted on the floor. Participants were instructed to pull handlebars back until the elbows were drawn past the spine. The cue was to "squeeze the shoulder blades together." Participants breathed in during the pulling motion and breathed out as arms returned to the starting position. Cues included "remember to keep your chest against the pad."

Overhead press

Participants were positioned in the machine so that the

facing



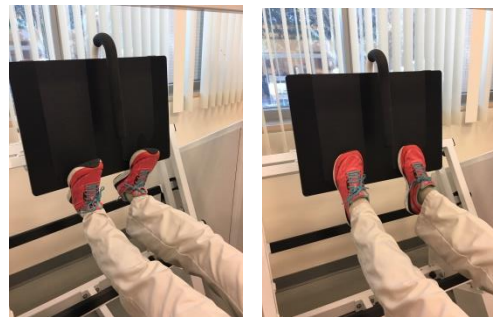
handlebars could rest naturally at shoulder level, palms inward at the start of the exercise. Participants pressed the handlebars until the arms were fully extended, without elbow locking. Participants breathed out with the pressing motion and breathed in as the arms returned to the start position. Cues included, “do not arch your back” or “do not push off the ground with your feet” if needed.

Biceps curl



Participants were seated in the machine with their chest against the roller pad. The seat height was adjusted so that at the start position the arms could be fully extended diagonally to the floor and the shoulders remained in a natural neutral position (not elevated). The elbows were aligned with the machine’s axis of rotation. The handlebars were gripped with palms facing up. Participants flexed their biceps and pulled the handlebars toward the shoulder. Cues included, “keep squeezing those muscles all the way up” and “remember to keep your chest against the pad”.

Calf press



Using the Leg Press machine and same seat position, participants performed the calf press. With legs extended, the participants placed the forefoot (balls and toes) on the footplate and the heels extended off. Participants were cued to “keep toes pointing straight ahead.” The participants first stretched their Achilles tendon and calf and then pushed forward with their forefoot to raise the heels. Participants exhaled with each press and inhaled with the return to the start position.