

Physical therapist visual observation of movement quality during lower extremity resistance exercises: A descriptive study

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BACKGROUND

- Visual assessment is a valid method to assess movement quality and it is frequently used by physical therapists in both research and clinical settings^{1,3,5}
- By visually identifying asymmetries and compensatory movements during functional tasks, physical therapists can screen for injury prevention and target patient goals^{2,4}

PURPOSE

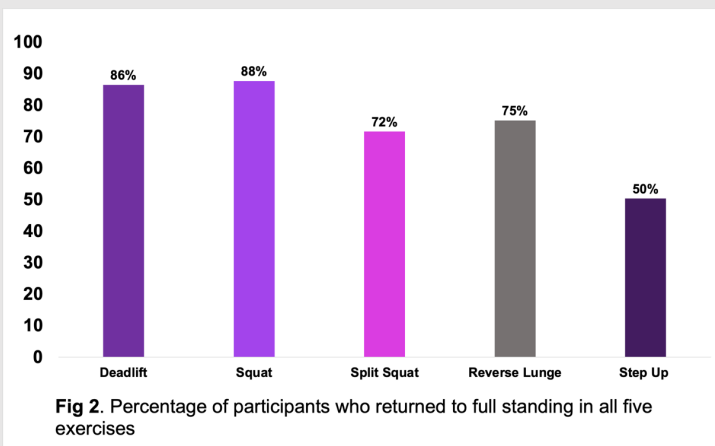
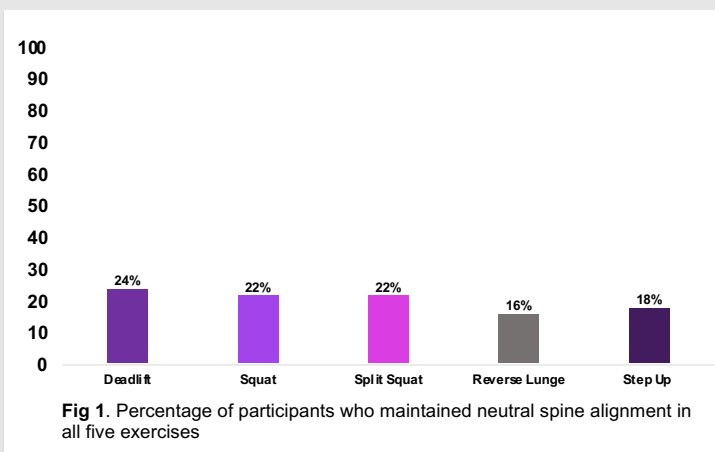
- Describe the visual observation of movement quality by an experienced physical therapist during five lower extremity exercises on the Tonal exercise machine

METHODS

- 5 exercises performed using the Tonal exercise machine
- After a warmup, each exercise was completed twice (10 repetitions/set)
- An experienced physical therapist assessed exercise techniques using an observation tool (Table 1)
- Participants were recruited from the University and the community of Lebanon via flyers and snowball sampling
- Descriptive statistics were performed for data analysis



Exercise	Exercise Techniques
Neutral Grip Deadlift	<ul style="list-style-type: none"> • Adequate posterior hip movement • Maintains appropriate trunk position throughout • Returns to full standing
Racked Squat	<ul style="list-style-type: none"> • Adequate posterior hip movement • Maintains appropriate trunk position throughout • Returns to full standing
Split Squat	<ul style="list-style-type: none"> • Adequate squat depth • Maintains appropriate trunk position throughout • Returns to full standing
Reverse Lunge	<ul style="list-style-type: none"> • Performs with correct hip & knee alignment • Maintains appropriate trunk position throughout • Returns to full standing
Resisted Step Up	<ul style="list-style-type: none"> • Performs with correct hip & knee alignment • Maintains appropriate trunk position throughout • Returns to full standing



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RESULTS

- 32 (50% female) healthy adults, mean age 30.2 (standard deviation 9.7) years
- 54% of participants achieved adequate posterior hip movement in the deadlift
- 81% of participants demonstrated adequate posterior hip movement during the squat exercise
- 49% of participants achieved adequate knee range of motion in the reverse lunge
- 17% of participants achieved adequate squat depth during the split squat
- Participants displayed varied ability to maintain balance during the resisted step up for the first set (76%) but improved in the second set (84%)

DISCUSSION

- Maintaining neutral spine alignment and achieving adequate squat depth can be difficult for people to perform during lower extremity exercises that require lowering and raising of the body
- Future research is needed to investigate the correlations in the limited ability to maintain neutral spine alignment and achieve adequate squat depth in healthy adult populations

CONCLUSION

- People may have greater success in completion of bilateral lower extremity exercises. Practice and additional cueing may be needed when prescribing unilateral lower extremity exercises

REFERENCES

