



The Down-to-Stand Muscle Power Test



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“If you are not
measuring, you’re just
guessing”

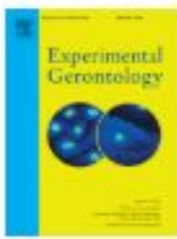


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Experimental Gerontology

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The sit-to-stand muscle power test: An easy, inexpensive and portable procedure to assess muscle power in older people

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- Age-related muscular changes
 - = decreased strength and power production
 - sit to stand transitions
 - stair climbing
 - ambulating at a faster gait speeds
 - and reacting to a loss of balance
- NB to assess muscle power



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- Valid, reliable, and feasible power assessments = prescription of appropriate exercises
- No clinically feasible lower extremity power tests for dogs described in the literature.



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- A muscle power calculation using the 5xSTS test was demonstrated to be a reliable and valid measure of muscle power in a geriatric population
- The objective of this *pilot* study was to determine whether this test could be modified for use in older dogs.



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METHODS

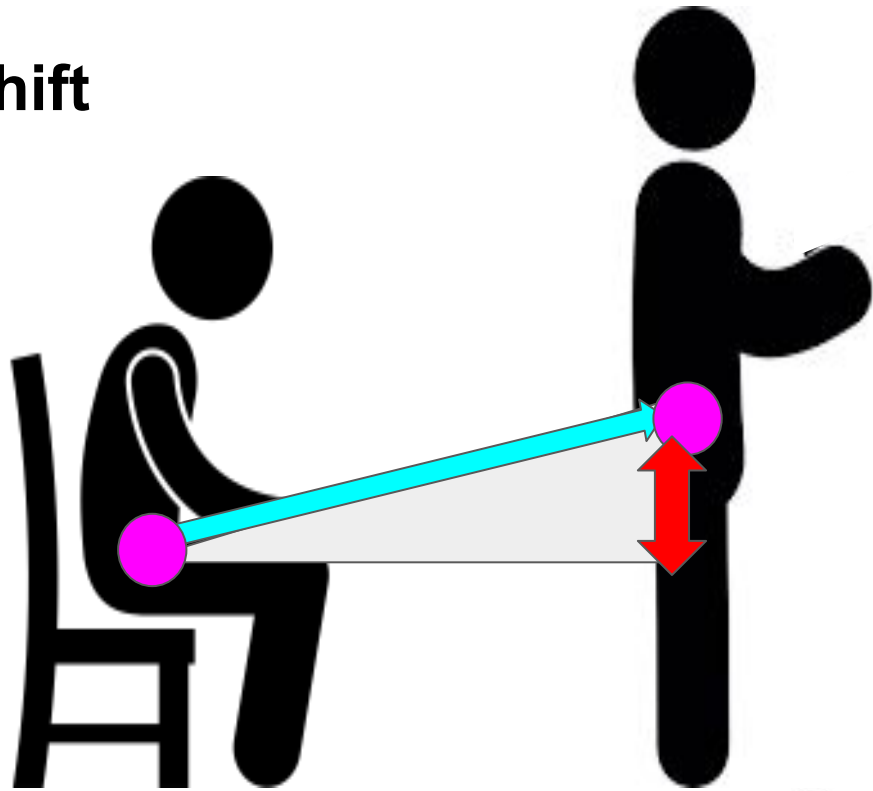
- ***Inclusion Criteria:***
 - Dogs 9 years and older
- ***Exclusion Criteria:***
 - Lack of cognitive function - can't comprehend cues
 - Paralysis
 - In the previous 6 months: neuromuscular or joint injury, stroke, myocardial infarction or bone fracture.
- **N = 7**



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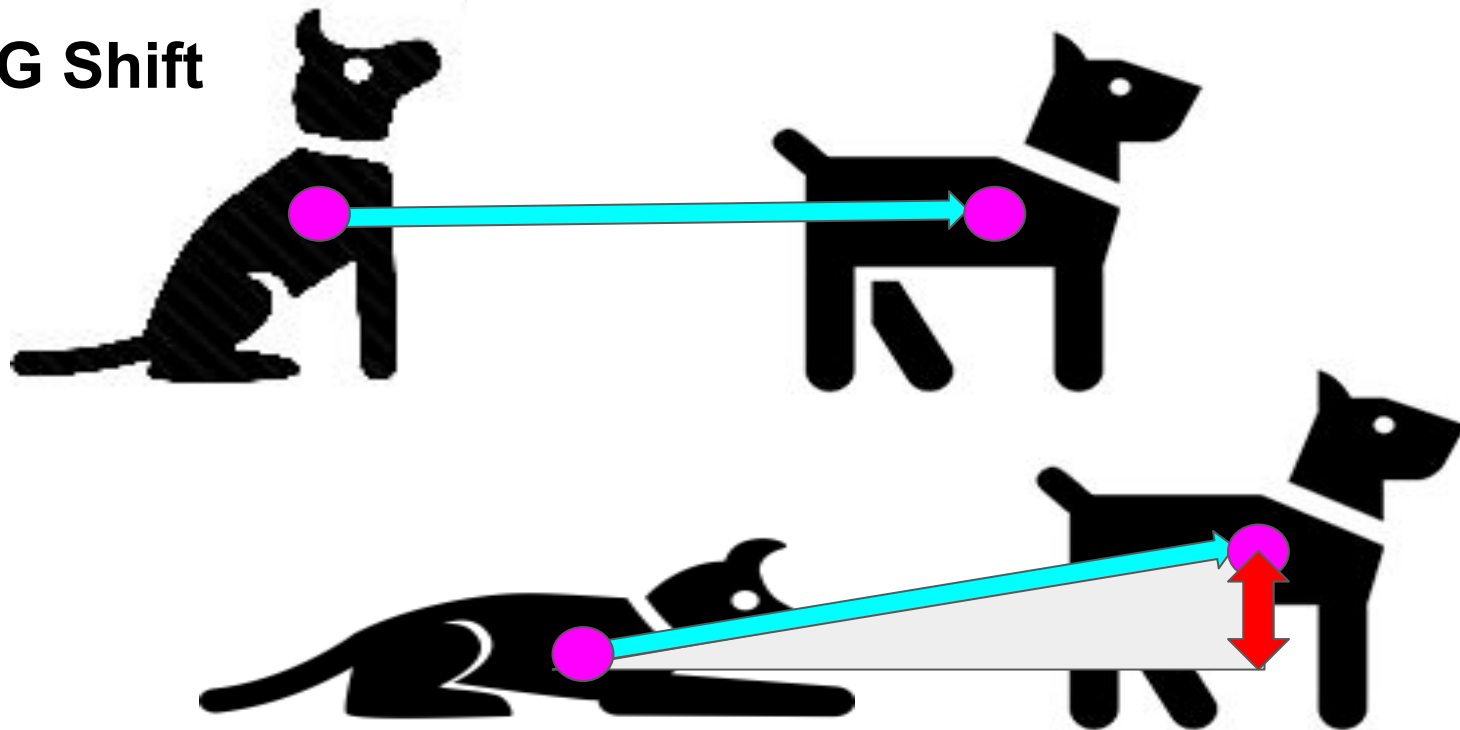
CoG Shift



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CoG Shift



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PRIMARY ASSESSMENT

- Participants performed 1-2 trials of the 5xDTS with 30-60 seconds of rest between them.



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- Mean **velocity** = distance/time
- Distance = vertical displacement of CoG
- Time = average time concentric portion of 1 transition during the 5xDTS (= 5xDTS x 0.1)
- Mean **Power** = force x velocity.



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- In this case the mean velocity result is taken and multiplied by body mass, 0.9 and gravity (9.8).
- Relative mean DTS power =
$$\frac{0.9 \times g \times \text{height}}{5 \times \text{DTS time} \times 0.1}$$



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SECONDARY ASSESSMENT:

- Physical function: 6MWT, Modified TUG test (6m).
- HRQL questionnaire.
- Anthropometric measurements (height and weight)
- Sarcopenia XR absorptiometry



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RESULTS:

Paired Data Sets	r-value	p-value
6MWT:TUG	-0.88778	0.001
6MWT:5xSTS	-0.89561	0.0003
6MWT:MEANP	0.980761	0.01
TUG:5xSTS	0.932637	0.01
TUG:MEAN PWR	-0.95075	0.001



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RESULTS:

- This suggests that the 5xSTS test is a feasible and valid method for calculating mean muscle power in geriatric dogs.
- Simple, inexpensive, portable



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LIMITATIONS and CONSIDERATIONS

- Pilot study with small sample size
- Results are encouraging and motivate the need for further investigation
 - geriatric dogs
 - other at-risk canine populations.
- Not a blinded study



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LIMITATIONS and CONSIDERATIONS

- 6MWT
- Benefits of the 5xDTS test vs 6MWT
- 5 x Healthy, trained dogs under the age of 9
= 400-430
- Possibly value in expressing as a percentage



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5xDTS Test



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Questions?



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