Association of self-reported physical activity and sitting time with the diaphragm and lower limb muscle thickness using ultrasonography

Principal Investigator
Ms. Aishwarya Shetty
M.Sc. Medical Imaging Technology
MCHP,MAHE, Manipal

Under the Supervision

Guide
Dr. Suresh Sukumar
Additional Professor
Department of Medical Imaging Technology
MCHP, MAHE

Co- Guide
Mr Baskaran Chandrasekaran,
Assistant Professor - Senior Scale
Department Exercise and Sports Sciences,
MCHP, Manipal

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INTRODUCTION

- Physical activity (PA) is crucial for potential health benefits and protection against chronic diseases.
- The association between exercise and muscle build-up is a long run connections.
- But how much is that difference in the muscle thickness between different levels of physical activity?
- Hence we aimed to relate various dimensions of PA and sitting time with the diaphragm & lower limb muscle thickness.

AIM

To relate various dimensions of self-reported physical activity and sitting time with the diaphragm & lower limb muscle thickness using ultrasonography.

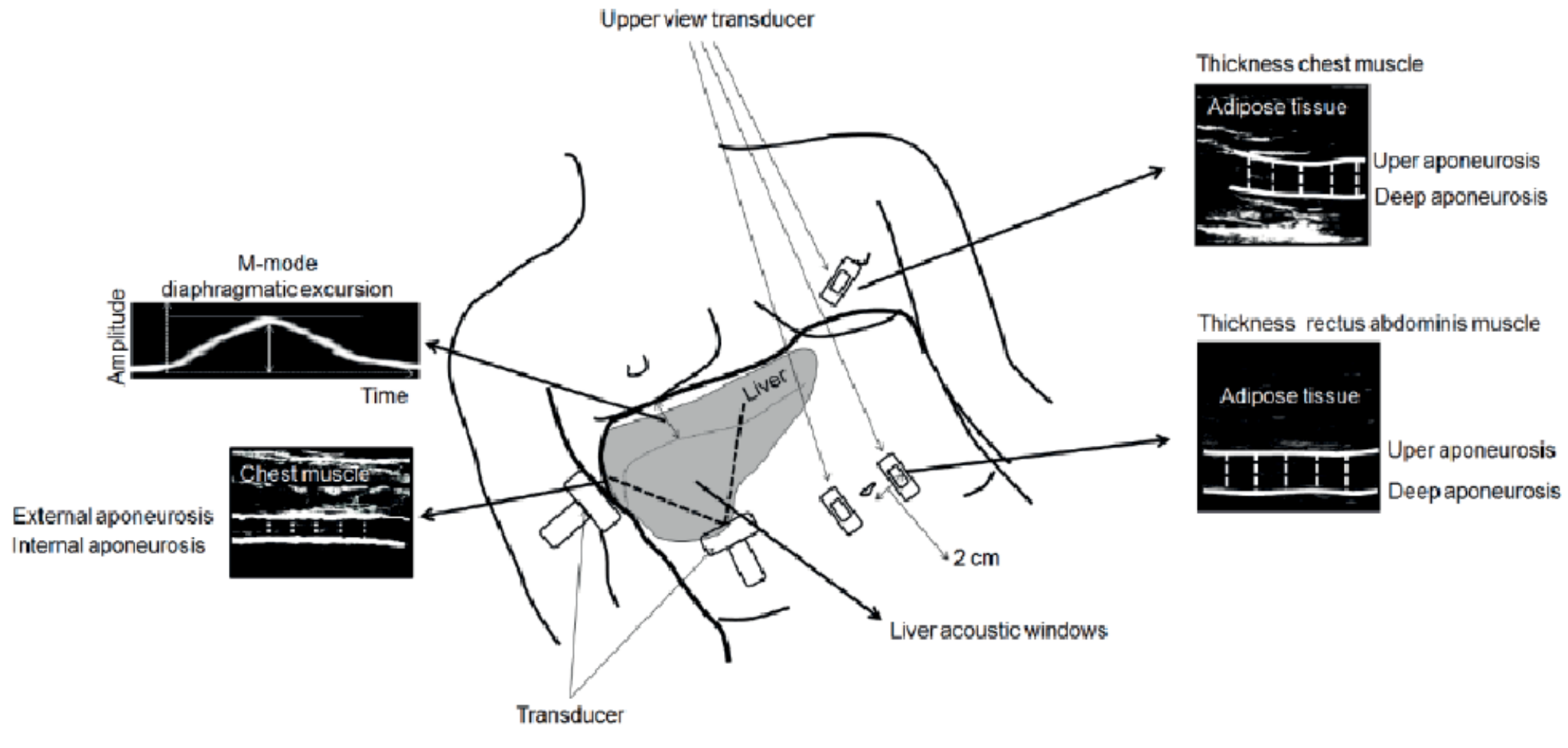
OBJECTIVE

- Primary :To compare diaphragm and lower limb muscle thickness of males aged 18 to 35 years old with self-reported physical activity and sitting time.

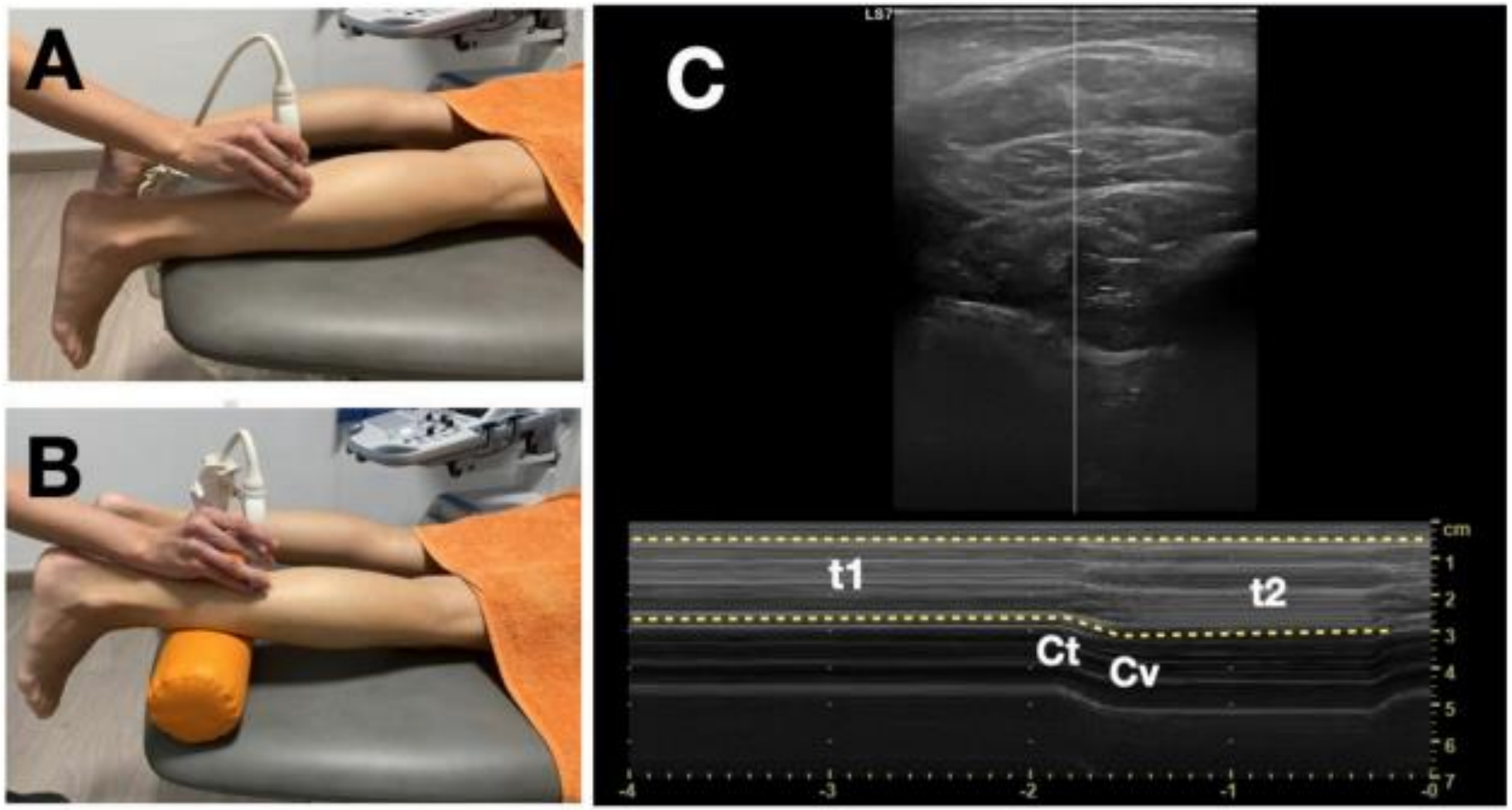
METHODOLOGY

- **Instrument used:** 13MHz linear transducer (Philips EPIQ 5)
- **Inclusion Criteria:** age 18 – 35 years old males.
- **Exclusion Criteria:** any bed ridden or acute trauma less than 3 months limiting physical activity.

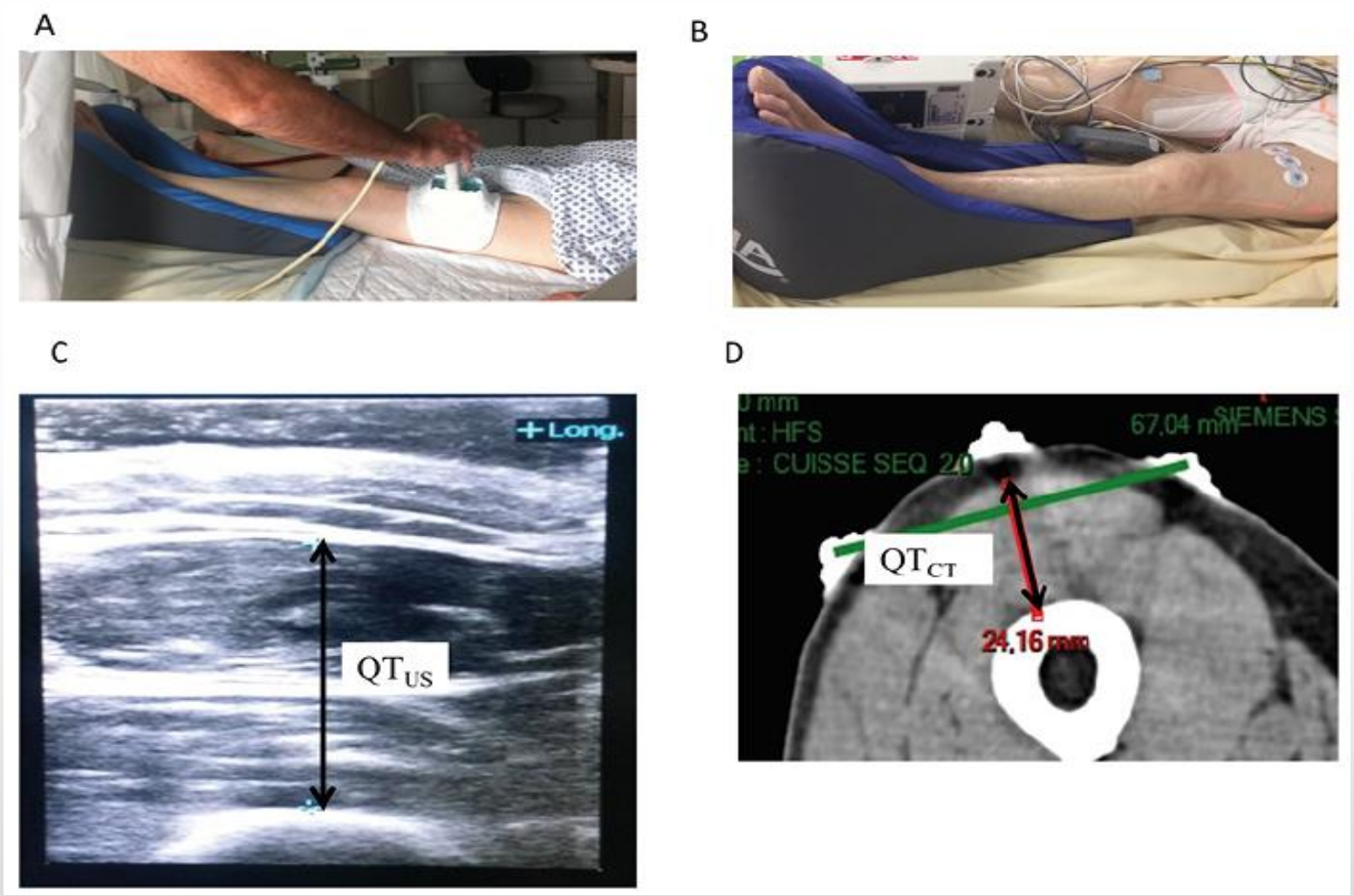
Measurement Of Diaphragm Thickness



Measurement Of Soleus Muscle Thickness



Measurement Of Anterior Thigh Muscle Thickness

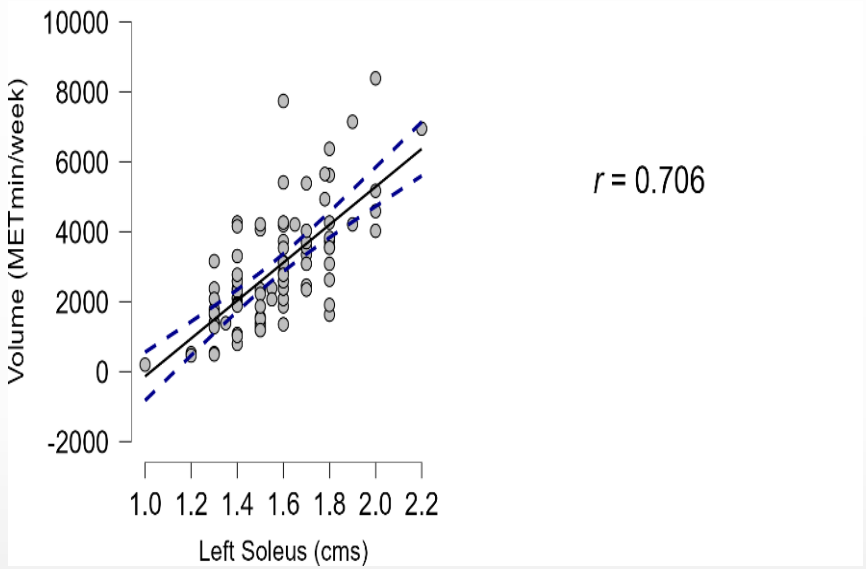


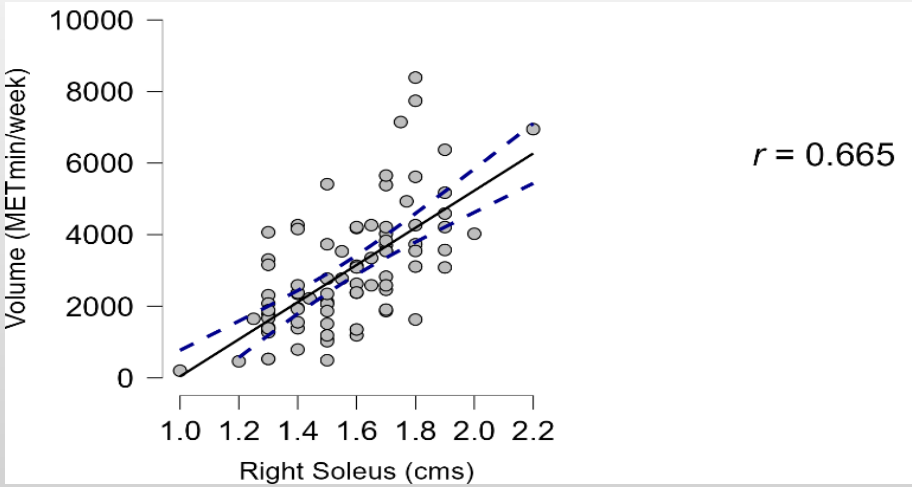
RESULTS
BASELINE CHARACTERISTICS

Variables		Mean±SD	Number (%)
Lifestyle	Smoking	Chronic N= 30 [28.01+/-4.509]	32.96
		Occasional N= 15 [27.61+/-4.338]	16.48
		Nonsmoker N= 45 [27.9+/-4.885]	49.45
	Alcohol	Chronic N= 6 [27.85+/-3.109]	6.59
		Occasional N= 39]27.90+/-4.29]	42.85
		Nonalcoholic N= 45 [27.97+/-4.67]	49.45
Occupation	Employed	N= 68 [27.9+/-3.951]	74.7
	Unemployed	N= 23 [27.97+/-3.514]	25
Physical activity levels	Vigorous	N= 39 [27.9+/-4.375]	42.85
	Moderate	N= 46 [27.83+/-4.749]	50.54
	Walking	N =6 [27.77+/-2.516]	6.59

ASSOCIATION BETWEEN LEFT AND RIGHT SOLEUS MUSCLE THICKNESS AND PHYSICAL ACTIVITY

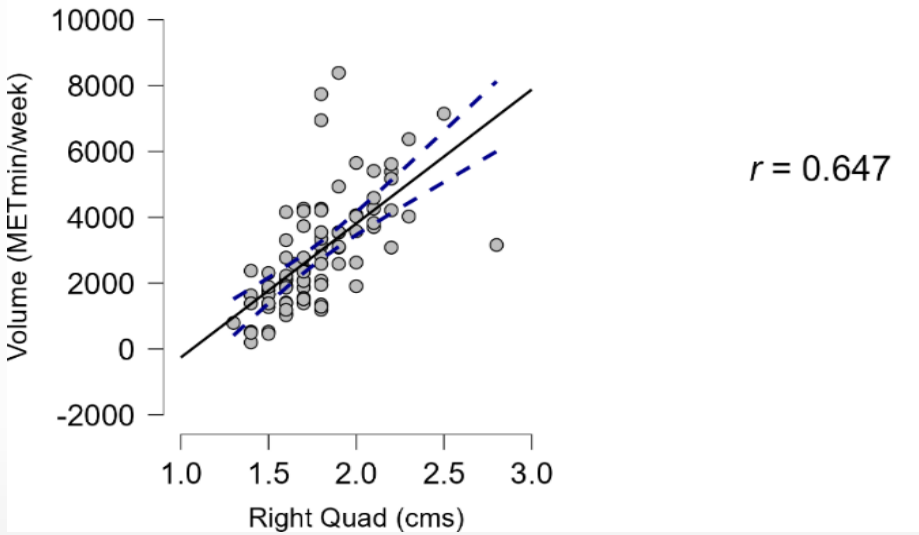
Muscle	Low PA	Moderate PA	High PA	VOLUME (METMIN/WEEK)	Pearson value	P value
Left soleus	1.0	1.56	2.2	0.706	0.68	<.001
right soleus	1.0	1.55	2.2	0.665	0.646	<.001

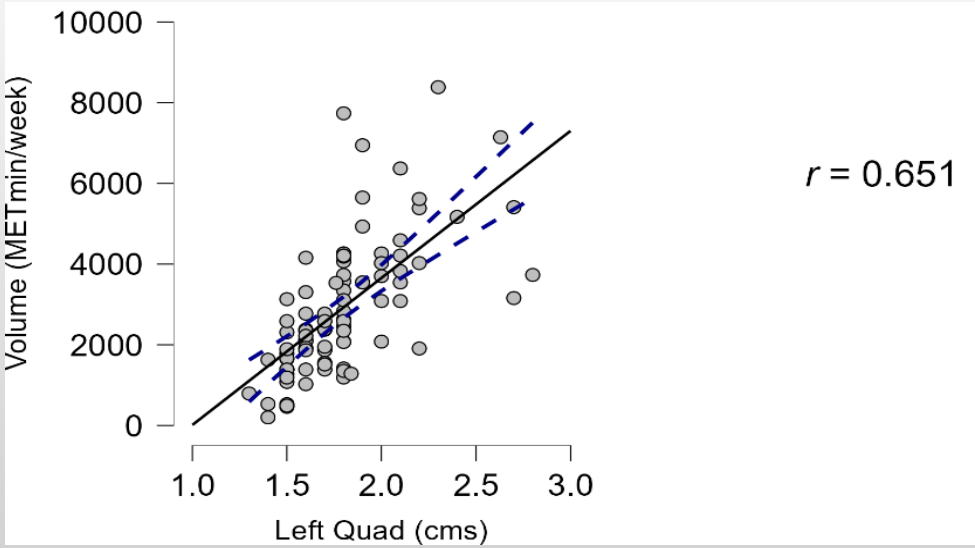




ASSOCIATION BETWEEN LEFT AND RIGHT QUADRICEPS MUSCLE THICKNESS AND PHYSICAL ACTIVITY

Muscle	Low PA	Moderate PA	High PA	VOLUME (METMIN/WEEK)	Pearson value	P value
Left quadriceps	1.3	1.79	2.8	0.651	0.653	<.001
Right quadriceps	1.3	1.78	2.8	0.647	0.709	<.001





ASSOCIATION BETWEEN INSPIRATION AND EXPIRATION OF DIAPHRAGM MUSCLE THICKNESS AND PHYSICAL ACTIVITY

Muscle	Low PA	Moderate PA	High PA	VOLUME (METMIN/WEEK)	Pearson value	P value
Inspiration diaphragm	0.19	0.25	0.29	0.057	0.097	0.358
Expiration diaphragm	0.18	0.23	0.27	-0.106	-0.143	0.178

CONCLUSION

- To conclude, the study's findings may also have an impact on determining and tracking muscle health. The muscle thickness measurement by ultrasonography is shown to be a reliable method, it may be utilised to detect and track muscle wasting and weakness in clinical settings, perhaps resulting in earlier interventions and better outcomes.

- The radiographer/medical imaging postgraduate findings reports were consistent, indicating that there were could be minor differences as compared to a radiologist.

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THANK YOU!