



SCHOOL OF PUBLIC HEALTH  
THE UNIVERSITY OF HONG KONG

香港大學公共衛生學院

# VING TSUN MARTIAL ART TRAINING FOR MIDDLE-AGED ADULTS: AN EXPLORATORY STUDY

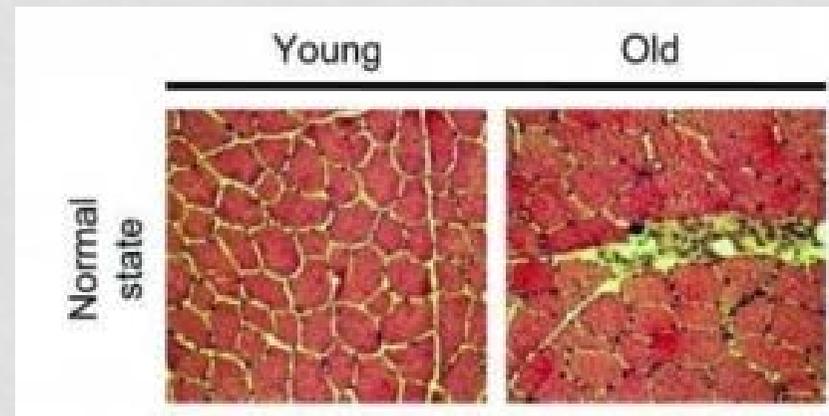
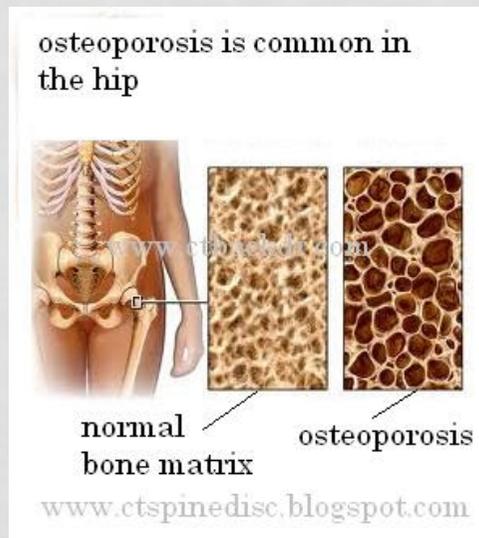
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# INTRODUCTION

- Human aging process is associated with:
  - a reduction in bone mineral content (BMC) and bone mineral density (BMD), and
  - loss of skeletal muscle mass and muscle strength.



<https://www.sciencedaily.com/releases/2009/09/090930084602.htm>

# INTRODUCTION

- Exercise training, specifically strength or resistance training, can effectively attenuate the normal decline in BMC and BMD and increase the size and strength of the trained muscles through hypertrophy of muscle fibers in middle-aged and older adults.
- However, the bone and muscle strengthening effects of resistance training is site-specific.



# INTRODUCTION

- A functional, whole-body (multi-sites) strengthening exercise program may be preferable, particularly for middle-aged and older populations.
- **Ving Tsun (VT)** is a **hard-style Chinese martial art** characterized by **fast and powerful movements**.



# AIM

- This cross-sectional study aimed to compare the axial and appendicular BMD, muscle mass and muscle strength of middle-aged practitioners of VT with those of non-practitioners.

➤ Findings may shed light on the use of VT training programme for physical conditioning and improving musculoskeletal health of middle-aged individuals in the community.

**健骨 練平衡 打得詠春 心肺強**

【本報訊】詠春拳，總會想超氣。李小龙，見招拆招，一個打十個，其實詠春拳除了「好打得」，持續練習對健康有不少好處。詠春拳教練兼香港大學物理治療學方少明曾就詠春拳進行多方面研究，發現練習詠春拳不但能增強心肺功能，骨質強度、手腳力、下肢肌肉力量及平衡力也會提升，不僅年輕人練習詠春拳可以得益，中年人甚至長者練習也會有效果。 記者：蘇敏慈

【本報訊】拳擊無畏，練武健身是否容易受傷？外報雖然有研究發現 79.2% 練習詠春拳人士曾經受傷，但大多為軟組織損傷，如拉傷、挫傷等，沒有嚴重受傷如骨折等。港大運動及康復研究所助理教授兼註冊物理治療師方少明表示，根據其經驗，詠春拳較多挫傷、擦傷，若練習後有腰痠痛、關節痛，則較多為排測性傷患，一般為拳法動作不正確時才會導致。

**亂練拳法易受傷**

【本報訊】拳擊無畏，練武健身是否容易受傷？外報雖然有研究發現 79.2% 練習詠春拳人士曾經受傷，但大多為軟組織損傷，如拉傷、挫傷等，沒有嚴重受傷如骨折等。港大運動及康復研究所助理教授兼註冊物理治療師方少明表示，根據其經驗，詠春拳較多挫傷、擦傷，若練習後有腰痠痛、關節痛，則較多為排測性傷患，一般為拳法動作不正確時才會導致。

**練後肩膀酸痛要留**

方指詠春招式小念頭中有一個「勝手」招式，多用作阻擋及卸掉對方攻擊。動作為先擺二字半馬，手肘半掌張，前臂向上伸，直至上臂與前臂成水平，上臂與胸口成一直角，前臂向下傾斜。當對方攻擊時則順向卸掉其手法。不過，部份人會向上抬手擋格，這樣就容易弄傷關節，所以若練習後發現有肩膀疼痛、發熱、腫脹等，均為不正常表現，要立即停止練習及尋求治療。

此外，有關平足人士練習詠春亦要注意，方指，最基本的二字半馬為雙腳內出，內八字腳及 X 形，初學者常會內出太多，以致關節內關節份牽拉，外則過度受壓出現疼痛，且此動作會增加足部內壓力，扁平足人士會更易有痛症出現，故要特別小心，有需要應使用特別鞋墊後才練習。

方指，只要注意詠春動作等，練習後不應有痛症出現，若有痛即代表動作成或其他問題出現。她建議過去 10 年教學的經驗總結，把小念頭的每個招式配以運動科學及健康醫學知識拆解，推出《拆解小念頭》一書，希望詠春愛好者能更安全有效地學習詠春，避免不必要的受傷。 ■記者蘇敏慈

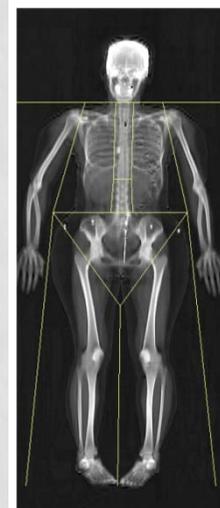
# METHODS

- Eighteen VT practitioners and 36 matched controls participated in the study.
- All of them underwent a one-day battery of musculoskeletal examinations in a University laboratory.



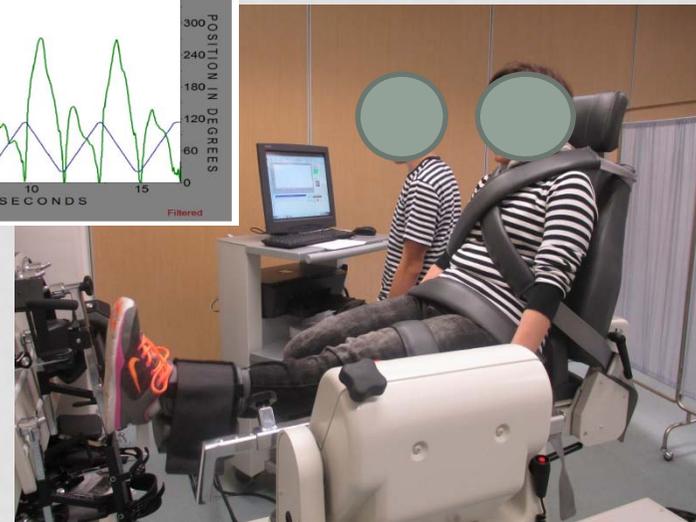
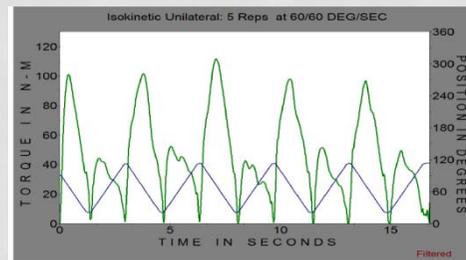
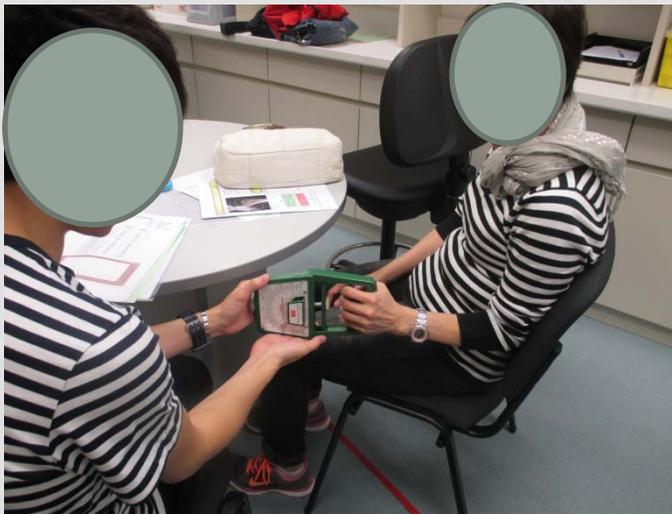
# METHODS

- **BMD** of **total radius**, **total hip**, **femoral neck**, and **lumbar spine** were assessed using dual-energy X-ray absorptiometry (**DXA**).
- **Lean (muscle) masses** of the **arm**, **leg** and **trunk** were also quantified by a whole-body DXA scan.



# METHODS

- Muscular performances (maximum muscle strength and speed of muscle force production) of the dominant upper limb and lower limb were assessed using a Jamar dynamometer and an isokinetic dynamometer at  $60^{\circ}/s$ , respectively.



# RESULTS

	VT group (n = 18)	Control group (n = 36)	p value
Age, years	51.8 ± 17.7	58.7 ± 11.0	0.143
Sex, n	12 men/6 women	18 men/18 women	0.245
Weight, kg	65.2 ± 11.0	67.8 ± 13.0	0.466
Height, cm	166.4 ± 5.5	164.1 ± 9.8	0.287
Body mass index, kg/m <sup>2</sup>	23.5 ± 3.6	25.3 ± 4.3	0.133
VT experience, years	10.9 ± 12.3	0	—
Physical activity level, MET hours per week	8.2 ± 15.9	4.4 ± 7.9	0.342
Time spent in outdoor activities (sunlight exposure), hours per week	2.4 ± 3.2	2.2 ± 3.1	0.816

# RESULTS

## Multivariate analysis of variance

	VT group (n = 18)	Control group (n = 36)	p value	Effect size
<b>Upper limb (dominant side)</b>				
Total radius BMD, g/cm <sup>2</sup>	0.58 ± 0.09	0.52 ± 0.10	0.023*	0.095
Arm lean mass, g	2442.92 ± 536.91	2343.82 ± 611.51	0.562	0.007
Handgrip strength, kg	35.29 ± 9.41	31.58 ± 8.23	0.143	0.041
<b>Lower limb (dominant side)</b>				
Total hip BMD, g/cm <sup>2</sup>	0.99 ± 0.17	0.91 ± 0.17	0.114	0.048
Femoral neck BMD, g/cm <sup>2</sup>	0.80 ± 0.17	0.72 ± 0.15	0.090	0.055
Leg lean mass, g	7370.43 ± 1487.70	6258.51 ± 1508.52	0.014*	0.113
<b>Isokinetic body weight-adjusted peak torque (60°/s), %</b>				
Knee extensors	218.44 ± 63.63	139.63 ± 48.98	<0.001*	0.329
Knee flexors	102.44 ± 32.60	63.71 ± 31.56	<0.001*	0.256
<b>Time to peak torque (60°/s), ms</b>				
Knee extensors	664.44 ± 178.83	755.14 ± 211.73	0.127	0.045
Knee flexors	717.78 ± 258.36	1046.29 ± 327.56	0.001*	0.211
<b>Trunk</b>				
Lumbar spine BMD, g/cm <sup>2</sup>	0.99 ± 0.17	0.97 ± 0.16	0.693	0.004
Trunk lean muscle mass, g	22789.92 ± 3902.93	21061.31 ± 5267.13	0.345	0.022

# RESULTS

- VT practitioners demonstrated:
  - 11.5% higher **total radius BMD** ( $p = 0.023$ );
  - 17.8% higher **leg lean mass** ( $p = 0.014$ );
  - 56.4% higher isokinetic body weight-adjusted **peak torque** of the **knee extensor muscles** ( $p < 0.001$ );
  - 60.8% higher isokinetic body weight-adjusted **peak torque** of the **knee flexor muscles** ( $p < 0.001$ ); and
  - 31.4% **shorter time to reach peak torque** in the **knee flexor muscles** ( $p = 0.001$ ) than the controls.
- No significant between-group differences were found in all other musculoskeletal outcomes ( $p > 0.05$ ).



# CONCLUSIONS & IMPLICATION

- Middle-aged VT practitioners displayed higher total radius BMD and leg lean mass and better knee extensor and flexor muscular performances than their healthy active counterparts.
- *Therefore, health care professionals may consider using this novel, non-expensive and enjoyable training method to improve the musculoskeletal health of middle-aged adults.*
- Certainly, further randomized controlled trial is needed to confirm the aforementioned beneficial effects of VT training in the adult population.



# KEY REFERENCES



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Thank you !