

Relationships Between Different Types Of Physical Activity And Metabolic Syndrome

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INTRODUCTION:

Metabolic syndrome(MetS) is a clustering of at least three of the five following metabolic disturbances: abdominal obesity, elevated blood pressure, elevated fasting blood glucose, high triglycerides, and low high-density lipoprotein cholesterol. MetS and its components are related to the risk of developing cardiovascular disease, diabetes, and several cancers. In Taiwan, encouraging workers' physical activity is one of the main workplace-health-promoting programs to prevent MetS. We hypothesized that not only leisure-time PA but also occupational and commuting PA at an appropriate intensity may reduce the risk of MetS and its components. The aim of this study was to investigate the relationships of different physical activity types and metabolic syndrome in workers.

MATERIALS & METHODS:

In this cross-sectional study, 3296 Taiwanese workers aged 20 years and above were enrolled. A self-reported questionnaire was used to assess nutritional health behavior and PA levels related to occupation, leisure time, and commuting. Blood pressure, anthropometric measures, and biochemical determinations of the blood were also obtained.

RESULTS:

Multiple logistic regression was used to evaluate the adjusted odds ratios (ORs) and 95% confidence intervals (CI) of MetS and its components associated with different types of PA. The prevalence of MetS was 16.6% in workers. Compared with a low level of leisure-time PA, a high level of leisure-time PA showed a significantly lower risk of high triglycerides (OR 0.73, 95% CI 0.61–0.87) and MetS (OR 0.76, 95% CI 0.62–0.95). Compared with a low level of occupational PA, a high level of occupational PA represented a significantly lower risk of both abdominal adiposity (OR 0.64, 95% CI 0.49–0.84) and high triglycerides (OR 0.71, 95% CI 0.55–0.90).

DISCUSSIONS AND CONCLUSIONS:

This study suggests that high levels of leisure-time were associated with reduce risk of MetS. Moreover, we emphasize that not only leisure-time PA but occupational PA could be important for the prevention of MetS. Therefore, it is recommended that leisure-time and occupational PA should be considered an essential part of workplace health promotion and may reduce entire cluster of metabolic risk factors. Not only leisure-time PA but occupational PA could be important for the prevention of MetS. Leisure-time and occupational PA should be considered an essential part of workplace health promotion for reducing risk of MetS.

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Marantodes Pumilum Leaves Increased Callus Volume And Connective Density Of Osteotomized Tibia In Osteoporosis Rat Model

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INTRODUCTION:

Due to increasing life expectancy, osteoporotic fractures now accounts for higher incidence of morbidity and mortality that poses enormous economic challenge. One out of every 3 women above age 50 was reported to experience osteoporotic fracture [1]. Hip fractures, which account for 17% osteoporotic fractures, are the most fatal complication of osteoporosis with a mortality rate of 37.5% [2,3]. *Marantodes pumilum var alata*, *MPva* (syn. *Labisia pumila*), the queen of Malaysia herbs, has been reported to protect bone of laboratory animals against osteoporosis, and its being used as a supplement in managing postmenopausal symptoms such as hot flashes [4]. Despite the enormous data on osteoprotective properties of *MPva* in postmenopausal state, no previous study has investigated its effects on the most important complication of osteoporosis, fracture. In current study, the influence of aqueous leaf extract of *MPva* on repair rate of fractured tibia of ovariectomized Sprague-Dawley rats was investigated.

MATERIALS & METHODS:

Thirty healthy female Sprague-Dawley rats (4 months) were put into 5 groups (n=6): sham-operated (*Sham*); ovariectomized control (*OVXC*); estrogen treatment (*ERT*) and 2 leaf extract treatments (*MPv20* and *MPv100*). All animals, except sham-operated group, were ovariectomized. After ovariectomy, right tibiae of rats in all groups were osteotomized using pulse ultrasound and fixed with titanium plates. After 2 weeks healing period, the *ERT* group were treated with 64.5µg/kg/d *p.o.* estrogen (Premarin®) while the *MPv20* and *MPv100* groups received 20mg and 100 mg/kg/d *p.o.* doses of aqueous leaf extract of *MPva*, respectively, for 8 weeks. All animals were then sacrificed and osteotomized tibia were carefully harvested and investigated for morphometry and mineralization of calluses using micro-computed tomography (Skyscan 1076).

RESULTS:

The *Sham*, *ERT* as well as *MPv20* and *MPv100* groups showed better ossification and restoration of Frac- tured site when compared with the *OVXC* (Figure 1). To similar extent as *ERT* and *Sham* groups, significantly higher bone volume (*BV*) of callus was seen in *MPv20* group when compared with the *OVXC*. However, also similar to *ERT* and *Sham* groups, significantly higher bone volume fraction (*BV/TV*) OF callus was seen in both *MPv20* and *MPv100* groups when compared with

the *OVXC*. Connective density (*Conn. D.*) of callus, when compared with the *OVXC*, was significantly higher in *MPv20* and group only.

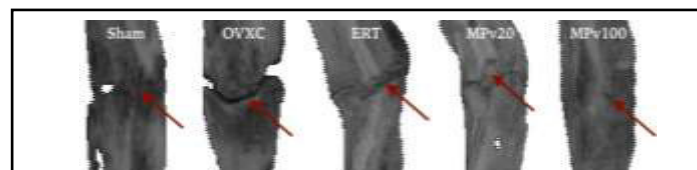


Figure 1: Micro-computed tomography images of fractured tibiae
Table 1: Quantitative morphometry of calus of fractured tibiae

Parameters	Sham	OVXC	ERT	MPv20	MPv100
BV (mm³)	12.33 ±0.5*	4.42 ±1.1	7.81 ±2.2	11.30 ±2.2*	9.35 ±1.6
BV/TV (%)	11.01 ±0.9*	4.72 ±1.0	11.72 ±3.04*	14.28 ±2.9*	13.45 ±1.5*
Conn.D (1/mm³)	163.20 ±12.5#	68.49 ±17.12	80.20 ±17.41	106.63 ±19.6#	57.45 ±12.7

P < 0.05. * Significantly different when compared with *OVXC* group.

Significantly different when compared with *OVXC* and *MPv100* group.

Sham: Sham-operated group, **ERT:** Estrogen treatment group, **OVXC:** Ovariectomized control group, **MPv20:** 20 mg/kg/d *MPva* leaf extract treatment group, **MPv100:** 100 mg/kg/d *MPva* leaf extract treatment group.

DISCUSSIONS:

The cycle of primary and secondary fracture healing is usually completed 6-8 weeks after initial injury [5]. Osteoporotic fractures are often refractory to healing. *MPva* leaves contain flavonoids and phenolic acids such as quercetin, myricetin, kaempferol, syringic acid, vanillic acid and gallic acid with estrogen-like activities (*phytoestrogens*) [6]. Increased fracture healing properties of *MPva* seen in this study could be attributed to estrogen replacement due to its phytoestrogenic content.

CONCLUSION:

Similar to healthy controls, *MPva* leaf extract restored ovariectomized rat's fractured tibia. Thus, *MPva* is a useful supplement in repair of fracture in postmenopausal state.

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Surgical Outcomes In Nonagenarians Following Hip Fracture

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INTRODUCTION:

Studies of surgical intervention for hip fractures among nonagenarians are limited, and most of them were performed in western countries. Therefore, the object of this study is to investigate the short-term outcomes of nonagenarians undergoing surgery for hip fracture in Taiwan.

MATERIALS & METHODS:

Patients who were older than 90 years and who had undergone surgery for hip fracture during the period from 2012 to 2015 were identified from the hospital's computerized database. The medical records of all of the identified patients were retrospectively reviewed. Information regarding age, gender, type of fracture, underlying diseases, and the timing and types of surgery were recorded. The data was collected on a routine basis and the analysis was carried out retrospectively

RESULTS:

During the study period, a total of 101 patients underwent surgery for management of hip fractures. The age of patients ranged from 90 to 96 years (mean, 91.9 years) and women comprised most of the patients. The sites of hip fractures were intertrochanteric (n = 57, 56.4%) and the neck of the femur (n = 44, 43.6%). Hypertension was the most common underlying disease, followed by diabetes mellitus.

DHS was the most common type of device (n = 53, 52.5%) followed by Austin Moore cemented hemiarthroplasty (n = 38, 37.6%), cannulated screws (n = 5, 5.0%), and reconstruction nails (n = 5, 5.0%). General anesthesia was the most common type of anesthesia in 87 patients, followed by spinal anesthesia.

Table 1. Demography of patients.

Variable	No. (%) of patients (n = 101)
Age, yr (mean ± SD)	91.9 ± 1.9
Female ratio	76 (75.2)
Site of hip fracture	
Intertrochanteric	57 (56.4)
Femoral neck	44 (43.6)
Hemoglobin, g/dl (mean ± SD)	11.3 ± 1.7
Underlying diseases	
Hypertension	50 (49.5)
Diabetes mellitus	18 (17.8)
Coronary artery disease	14 (13.9)
Congestive heart failure	14 (13.9)
Chronic obstructive pulmonary disease	13 (12.9)
Cancer	12 (11.9)
Stroke	9 (8.9)
End-stage renal disease	4 (4.0)
ASA scores (mean ± SD)	3.4 ± 0.5
Time to operation after admission	
< 24 hours	81 (80.2)
24–48 hours	7 (6.9)
> 48 hours	13 (12.9)
Transfusion during operation	76 (75.2)
Outcomes	
Major complication	7 (6.9)
Length of hospital stay, days (mean ± SD)	12.4 ± 17.0
30 days readmission rate	16 (15.8)
30-day mortality rate	10 (9.9)
One-year mortality (n = 75)*	13 (17.3)

*Only 75 patients followed up one year after surgery

DISCUSSIONS:

We investigated the short-term surgical outcomes of nonagenarians with hip fractures in Taiwan due to the lack of published information on this age group. Although our study may be different from other studies in design, population, and the type of management, the low mortality rate in the present work is similar as previous studies in western countries. Overall, it suggests that surgery may be a safe procedure for nonagenarians with hip fractures.

CONCLUSION:

In conclusion, the short-term results for Asian nonagenarians with hip fractures showed that surgical management is a safe intervention in selected patients.

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What Makes Your Bones Brittle? Beverages For Bone Health—A Systematic Review

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INTRODUCTION:

Osteoporosis is an asymptomatic disease that causes bone loss, which leads to fractures and further public health burden. Coffee, tea and carbonated beverages are the most popular non-alcoholic beverage in the world. The association of these beverages with bone health has been investigated for more than two decades but yielded inconsistent conclusions. In the presentation, we performed updated systematic review with stricter clinical and methodological considerations to explore the efficacies of coffee, tea and carbonated beverages on bone health.

MATERIALS & METHODS:

We searched MEDLINE-OVID, Cochrane CENTRAL databases and Chinese Electronic Periodical Services, aiming specifically at randomized controlled trials (RCT) and people with the diagnosis of osteoporosis or osteopenia. Search terms included both scientific and common names of coffee, tea, caffeinated beverages and carbonated beverages. The screening of the included studies, data extraction, critical appraisal and software followed the standards of Cochrane Collaborations, and was performed by two independent reviewers. The primary outcomes were any effects of bone health, including bone mineral density and bone turnover markers, with secondary outcomes of any other benefits, in order to examine the effect as broad as possible. Other outcomes included adverse events of beverages. We would not perform meta-analysis if the outcomes were not reported or inappropriate to be analysed.

RESULTS:

We initially identified a total of 25 reports addressing the topic. After full-text inspection and de-duplication, only one study met the criteria for analysis. Because it is meaningless to perform meta-analysis, we performed critical appraisal and narrative review of other related studies.

DISCUSSIONS:

We found only one RCT evaluating the effects of green tea on bone health in postmenopausal osteopenic women, and this made the planned meta-analysis not possible. The same author had

published a detailed design prior to this RCT, demonstrating low risk of bias after our critical appraisal. This four-arm study, comparing the effect of 6-month of green tea polyphenols and/or Tai-Chi exercise, found that green tea supplement positively improved bone turnover markers and muscle strength. This finding was consistent with most observational studies, revealing that tea consumption might be beneficial for bone mineral density.

On the other hand, several longitudinal studies have found an inverse correlation between caffeine intake and bone density, especially for women. In the Framingham Osteoporosis Study, consumption of over 2.5 units of caffeine per day increased the hip fracture risk. It also showed that cola was associated with lower hip BMD in women.

For researchers, we urge more randomized controlled studies in the future. For clinicians, giving advices to people concerning about this issue should still be in a more conservative manner, especially among female group.

CONCLUSION:

The evidence supporting tea, coffee and carbonated beverages on bone health is still very limited. We need more meticulously performed studies with robust methodology to define its true efficacy.

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