

## Tai Chi among culturally diverse mid to older community dwelling Canadian adults living in low income neighborhoods

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## What we know

- Tai Chi is a traditional Chinese form of physical activity- most popular in China especially among older adults
- Low intensity, slow, continuous, fluid
- Mind - body integration:
  - Mental concentration
  - Relaxation
  - Slow, deep breathing
- Activity with muscle strengthening elements, especially for the lower extremities.

## What we know

- **Tai Chi and Physical health**  
Improvements in cardio-respiratory & musculoskeletal functions, balance, waist circumference, BMI, blood pressure
- **Tai Chi and Mental health**  
Overall better mood, improvements in self-esteem, reductions in depression, decrease in stress levels
- Beneficial effects can be seen as early as 6 weeks
- “Tai Chi is a promising type of exercise that has the potential of being the preferred balanced training” (the American Geriatrics Society, the British Geriatrics Society and the American Academy of Orthopedic Surgeons - 2001).

## What we know

- Reduced mobility and musculoskeletal function
  - Leading cause of falls
  - Burden the health care system
- Prevention is an important challenge - Physical activity
- 68% of older adult women and 53% of older adult men in Canada do not participate in any form of regular exercise (Statistics Canada, 2005).
  - Low SES older adults and ethnic minorities

## What we know

Optimally:

- Safe
- Affordable
- Accessible
- Frequent
- Socially supportive

## What we do not know

- Limited research examining effectiveness of a TC intervention in a community based setting.
- Generalizability to the ethnically diverse Canadian population.
- Low SES, ethnic minority populations (could benefit substantially from an inexpensive, low impact PA modality like TC).

## Objectives- three years



1. Examine and assess the factors influencing older adults in terms of enrolment in a locally offered TC program
2. Examine the TC effects in terms of improved health related fitness and psychological well being
3. Examine and assess factors affecting sustained participation in TC

## Three years study



- Two groups:
  - Group 1: Cultural affiliation not related to TC
  - Group 2: Cultural affiliation related to TC

## Target population / inclusion Criteria



### Group 1- Jane / Finch Community

- Lower SES compared to Toronto mean
- Visible minority comprises over 70% of its population

### Group 2- Dundas / Spadina community

- One of largest Chinese communities in North America
- Socio-economically similar to the Jane-Finch

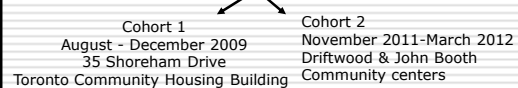
- Inclusion Criteria: Community dwelling, 50+ years, have medical capability to be involved in an exercise intervention.
- Study approved by the ethics review committee of York University. Signed consent forms obtained.

(Profile of Low Income in the City of Toronto 2010, Statistics Canada, 2010)

## Three years study



- Group 1: Cultural affiliation not related to TC



- Group 2: Cultural affiliation related to TC

Cohort 3:  
March 2011- July 2011  
Alexandra Park community center

## Specific objectives



- Characteristics of participants enrolled in the Tai Chi program
- Adherence levels
- Changes in functional fitness and perceived stress

## Tai Chi Exercise Program



- 16 weeks free Tai Chi program
- Tai chi classes taught by Tai Chi master
- 6 classes per week (on specific days in the morning and afternoon)- Advised to attend at least 2 sessions per week
- 1 hour sessions
  - 15 min warm-up (Qi Gong)
  - 45 min Tai Chi (Yang Style)
- Class attendance was assessed throughout study.

## Data collection



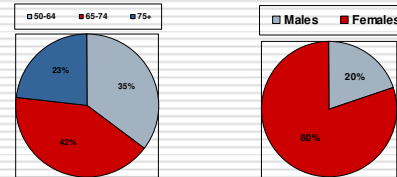
Specific sessions for data collection assessed pre program, mid study, and post-program.

- o Attendance
- o Socio-demographic characteristics
- o Physical health
- o Mental Health

## Results



A total of 210 participants were recruited (78, 80 and 52 for cohorts 1, 2, and 3).



## Results



<b>Education</b>	
Illiterate	14 (6.7)
Primary	80 (38.1)
High school	79 (37.6)
College/university	29 (13.8)
<b>Marital Status</b>	
Never married /separated/ divorced/ widowed	112 (53.3%)
Married / living with a partner	92 (43.8%)
<b>Income</b>	
<\$14,000 per year	135 (64.3%)
\$14,000-\$30,000	35 (16.7%)
>\$30,000	19 (9.0%)

## Results



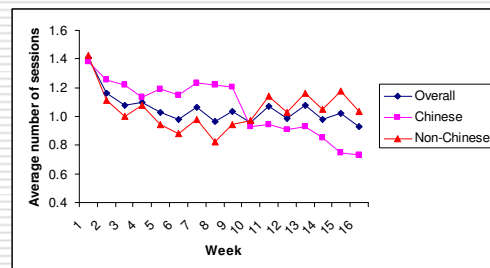
<b>Ethnic origin</b>	
South America	54 (25.7)
China	74 (35.2)
Caribbean	13 (6.2)
South Asia	10 (4.8)
Europe	33(15.7)
Canada	13 (6.2)
Other	8 (3.8)
<b>Smoking</b>	4 (1.9)
<b>Drinking alcohol</b>	45 (21.4)
<b>Walking provision</b>	18 (8.6)
<b>Previous participation in TC</b>	49 (23.3)

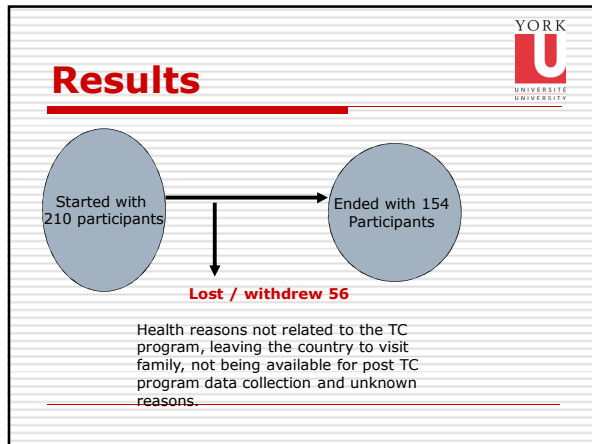
## Results



<b>Perceived physical fitness</b>	
Poor / very poor	22 (10.5)
Average	91 (43.3)
Good	63 (30.0)
Very good	25 (11.9)
<b>Perceived Overall health</b>	
Poor / fair	46 (21.9)
Good	107 (51.0)
Very Good / Excellent	48 (22.9)
<b>Comorbidities</b>	
Hypertension	105(50.0%)
Arthritis	102(48.6%)
Diabetes	45(21.4%)
Depression	31(14.8%)
COPD	10 (4.8%)

## Attendance





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## Results

	Pre TC program Mean (SD)	Post TC program Mean (SD)	P
<b>Cardiovascular and anthropometric</b>			
Resting heart rate (bpm)	72.1 (10.0)	73.0 (10.4)	0.21
Resting diastolic blood pressure (mmHg)	75.5 (7.7)	75.6 (6.7)	0.88
Body mass index kg/m <sup>2</sup>	27.0 (6.7)	26.8 (6.7)	0.63

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## Results

	Pre TC program Mean (SD)	Post TC program Mean (SD)	p
<b>Functional fitness - Strength</b>			
Right hand grip (kg)	27.8 (8.8)	28.6 (8.8)	0.029
Left hand grip (kg)	26.7 (8.0)	28.1 (7.9)	<0.001
Combined grip strength (kg)	54.2 (16.6)	56.6 (16.3)	<0.001
<b>Functional fitness - Flexibility</b>			
Sit and reach (cm)	26.9 (9.1)	28.8 (8.5)	0.004

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## Results

	Pre TC program Mean (SD)	Post TC program Mean (SD)	P
<b>Functional fitness - Endurance</b>			
Chair stand (30 seconds)	12.4 (4.1)	15.8 (6.2)	<0.001
Arm curl (30 sec)	15.6 (5.3)	18.9 (5.7)	<0.001
Up and go	7.5 (3.3)	6.9 (2.6)	0.001
<b>Perceived stress</b>			
Perceived Stress Scale	18.8 (8.1)	17.3 (8.8)	0.027

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## Discussion

### Strengths

Multiple low income elderly ethnicities.

### Limitations

- Study design (internal validity)- impact of daily activity change, seasonal affect and health status, mood
- Self-reporting bias

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## General implications for enhanced participation

- Optimal mode of physical activity for a culturally diverse group of older adults
  - Well attended
  - Significant health improvements
  - Performed by ambulatory participants at any level of skill
- Incorporated into community programs, senior center activities, senior nursing homes- requirements do not involve expensive equipment (TC master, available space)
- Potential for considerable public health improvement and cost savings to the health care system.

## Future directions

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**Current studies:**

- Assessing the barriers and promoters for sustained participation in TC
- Assessing if physical and mental health improvements is different for older adults of Chinese versus non-Chinese origin

**Future studies:**

- Assessing sustainability of participation in TC exercise over longer duration (greater than 4 months)
  - Assessing cost effectiveness of TC programs.
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*Thank you!*

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