

# Participation of older Australians in evidence-based Fall Prevention exercise

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# Background

In 2007 older adults' public health physical activity recommendations were broadened to include not only MVPA

- Muscles strengthening exercise
- Balance training mentioned in relation to falls risk
- Flexibility exercises

Recommendations for fall Prevention best practices interventions are those that involve high balance challenge, functional training, taichi and stepping practices.

Physical activity surveillance uses global measure that capture participation in walking and other moderate to vigorous intensity aerobic activities (MVPA).

# Australian surveys that contain some information relevant to fall prevention exercise

- The NSW Health Fall Prevention Survey 2009 - a one-off survey with 5,681 older adults (65 +) living in NSW participating
- The “Exercise, Recreation and Sports Surveys” (ERASS) - the Australian Sport Commission continuous surveys 2001-2009 provided information on participation in 162 types of activities (unprompted)
- The National Nutrition and Physical Activity periodic survey conducted by the ABS since 2011 and contain questions on MVPA and strength training

## NSW older adults 2009 survey – prompted questions

### Prompted questions

1) In the past week how many times did you walk for at least 10 minutes continuously for exercise, recreation or to get to and from places?

Number of times \_\_\_\_ week

2) In the past 7 days how much time in total did you spent walking this way?

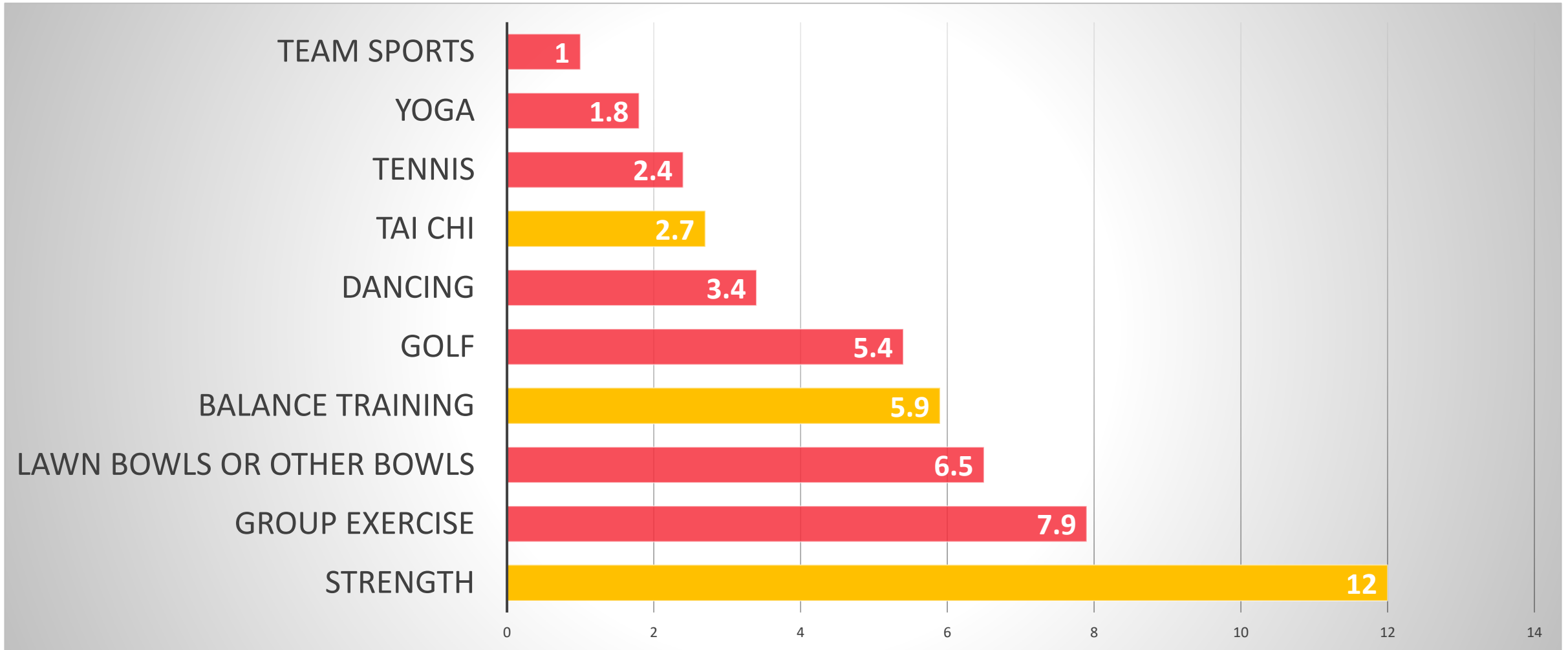
Minutes\_\_\_\_- Hours

3) Which of the following things have you done in the past week?

1. Strength or resistance training such as lifting weights, push ups
2. Tai chi
3. Yoga
4. Tennis
5. Golf
6. Lawn bowls or other type of bowls
7. Balance training
8. Group-based exercise such as aerobic, gentle exercise
9. Dancing
10. Team sports, specify
11. Other, specify

If yes, participants were asked how many times in the past week? What was the total time spent doing this activity

# Prevalence of participation in each prompted activities by 65+ in NSW



# Participation in prompted activities by gender

	Male (n= 2414)		
	n	%	95% CI
<b>Strength</b>	347	14.5	(12.9,16.1)
<b>Golf</b>	214	8.97	(7.67,10.28)
<b>Bowls</b>	200	8.77	(7.47,10.08)
<b>Balance</b>	110	4.75	(3.77,5.74)
<b>Group exercise</b>	96	4.52	(3.53,5.53)
<b>Dancing</b>	69	2.59	(1.91,3.27)
<b>Tennis</b>	45	2.1	(1.4,2.8)
<b>Team Sports</b>	36	1.81	(1.14,2.49)
<b>Tai Chi</b>	32	1.8	(0.9,2.1)
<b>Yoga</b>	22	0.8	(0.4,1.2)

	Females (n= 3267)		
	n	%	95% CI
<b>Group exercise</b>	347	10.77	(9.55,11.98)
<b>Strength</b>	323	9.88	(8.71,11.04)
<b>Balance</b>	221	6.94	(5.95,7.93)
<b>Bowls</b>	169	4.67	(3.89,5.45)
<b>Dancing</b>	137	4.09	(3.32,4.86)
<b>Tai Chi</b>	126	3.71	(3.0,4.44)
<b>Yoga</b>	79	2.61	(1.96,3.26)
<b>Tennis</b>	81	2.65	(1.99,3.32)
<b>Golf</b>	75	2.34	(1.74,2.94)
<b>Team Sports</b>	19	0.49	(0.25,0.73)

# Balance challenge definition: single Q and broader

Balance  
training

Probable balance  
challenge

Single Q + tai chi,  
dance, yoga, tennis,  
team sport (ball  
games, table tennis)

Possible balance challenge  
All of the above plus bowls,  
golf, darts croquet

12.2 [95%CI: 11.2-13.1]

Twice per week

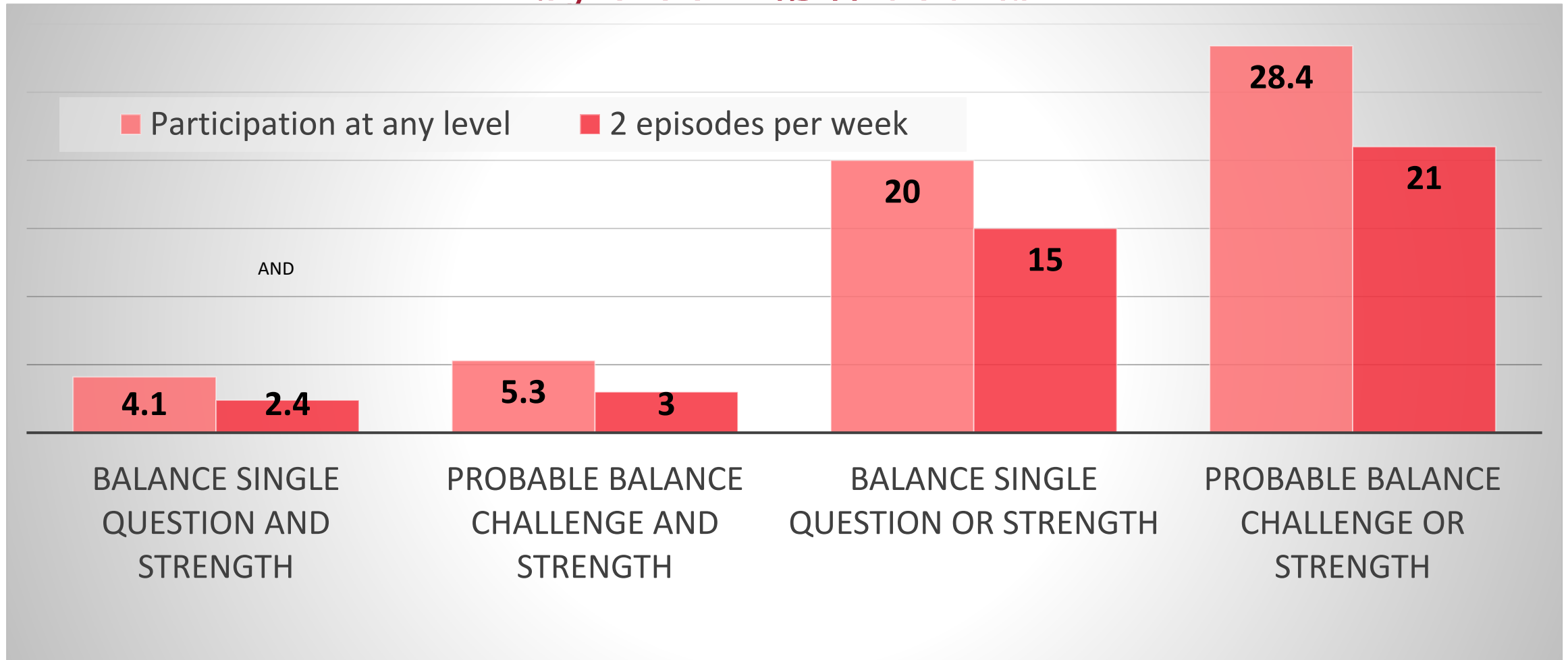
7.9% [95% CI: 7.1-8.8]

21.8% [95% CI: 20.5-25.3]

Twice per week

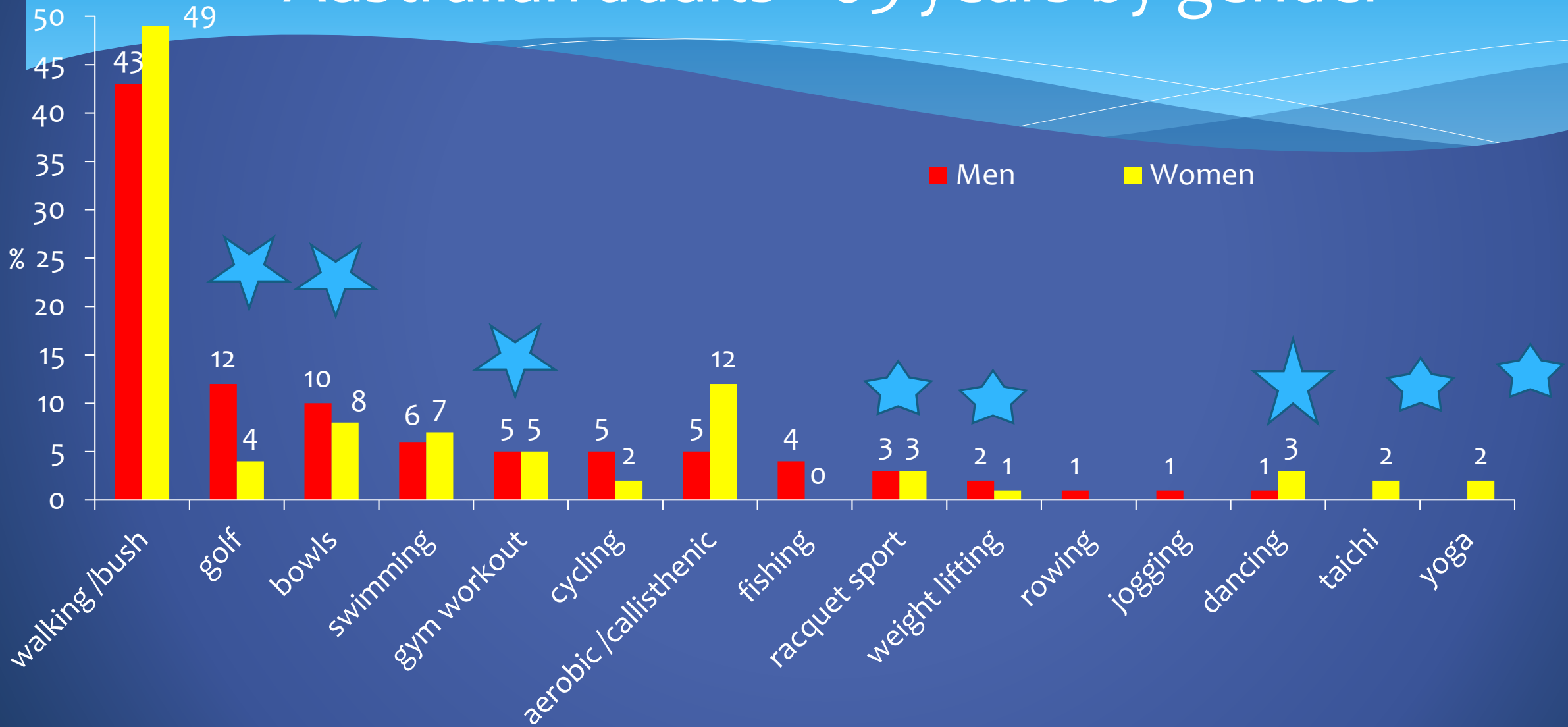
14.6 (95%: 13.6-15.7)

# Participation and compliance with balance and/or strength by older NSW adults

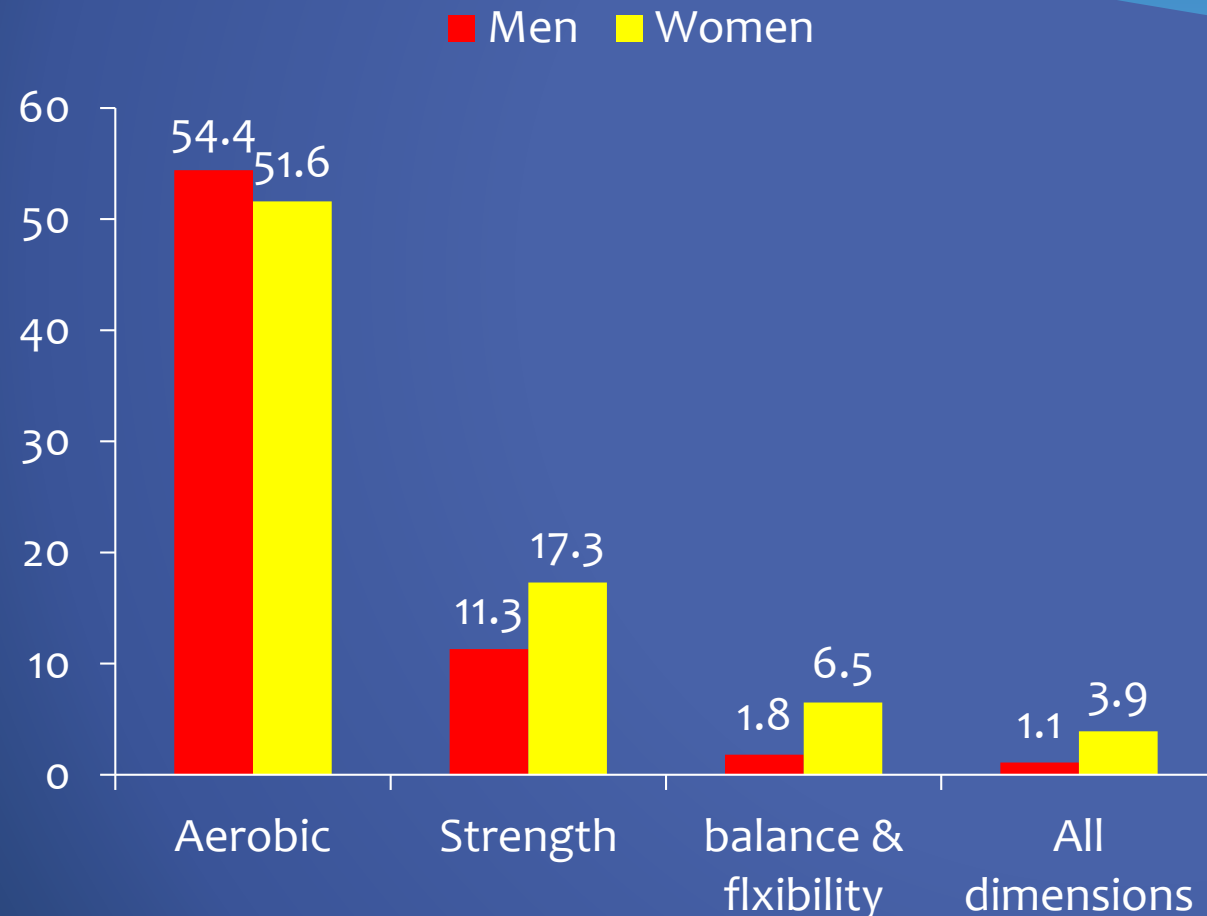




# ERASS: Prevalent activities (unprompted) Australian adults ≥65 years by gender



# Participation by group of activities



- \* Aerobic – walk/jog, golf, swimming, cycling, racquet sports, rowing
- \* Strength – gym workout, weight lifting
- \* Balance - tai-chi, dance, yoga

# National Nutrition and Physical Activity Survey 2012

## Meeting guidelines by older Australians

Age	MVPA 150 mins a week	Strength training ≥2/week	Both MVPA & strength
<b>65- 74</b>	46.6 (42.4 - 50.7)	12.4 (10.2 - 14.6)	8.3 (6.3 - 10.4)
<b>75+</b>	33.3 (29.4 – 37.1)	7.6 (5.4 – 9.7)	4.1 (2.3 – 5.8)

**Bennie et al. The descriptive epidemiology of total physical activity, muscle strengthening exercises and sedentary behavior among Australian adults BMC Public Health 2016, 16:73**

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# Discussion

## Balance enhancing activity

Low prevalence range from 6% to 21% depends on definition (Tai chi, Yoga, dancing, as single activities are not prevalent)

More research is needed on types of activities that can improve balance and reduce the risk of falls in older adults (Golf, swimming, cycling )

## Muscle strengthening

Both Fall Prevention Survey in NSW and the NNAPA agree with ~12% prevalence and lower compliance with recommended frequency

ERASS 2009 unprompted: 11.3% of older men and 17% of older women reported either gym workout (might include weights) or weight lifting

Compliance with all the three domains by all sources reviewed is low < 10%

Most older Australians participate in one activity type, if at all; this activity is mostly walking  
much work is needed for promoting strength and balance activities along with walking

# Acknowledgment:

**Data custodian for NSW Fall Prevention Survey:  
Centre for Health Advancement and Centre for Epidemiology and Research ,  
NSW Health**

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***Preventive Medicine, 2012; 55(6): 613-617 [ypmed.2012.10.001](https://doi.org/10.1016/j.ypmed.2012.10.001)***

**Australian Sports Commission for accessing ERASS Surveys**

**Published:**

***Journal of Science and Medicine in Sports, 2012; 15:213-219***

# Strength training in the USA

**Table 3**

Proportion (95% confidence interval) of older adults in the United States meeting strength training (2 + times/week) recommendations.

Year	NHIS	BRFSS
	2013	2013
Overall	16.7 (15.5, 18.0)	21.6 (21.1, 22.0)
Age		
65–74 years	19.2 (17.6, 21.0)	22.8 (22.2, 23.4)
75–84 years <sup>a</sup>	15.0 (13.1, 17.2)	19.9 (19.3, 20.6)
85 years and over	9.0 (7.0, 11.4)	NA
Gender		
Male	17.4 (15.7, 19.3)	24.7 (24.0, 25.5)
Female	16.2 (14.7, 17.7)	19.1 (18.6, 19.6)