



Protecting or harming oneself: Options of older cyclists to cycle safely

Carmen Hagemeister, Heike Bunte (TU Dresden)

Nikola Brammer, Petra Wagner (Leipzig University)

Gefördert durch:



Bundesministerium
für Verkehr und
digitale Infrastruktur

Gothenburg, 19 November 2014

aufgrund eines Beschlusses
des Deutschen Bundestages

Study

Original aim:

Evaluation of 6 months sports training for older cyclists (funded by German traffic ministry)

Pre-test (experimental and control groups):

- Questionnaires about behaviour in traffic
- Performance in bike course

Subjects

- 314 cyclists (189 men, 125 women)
 - ½ cycled (nearly) daily
 - ¼ cycled 3-4 days /week
 - ¼ cycled 1-2 days /week
 - few less
- 60-88 years old (mean 68 years)
- Living in or close to 14 small and medium sized cities in Saxony and Saxony-Anhalt

Which risk groups / risky behaviour can be identified?

Potential influences:

- Physical / medical problems
- Lack of motility/ fitness / coordination
- Exposure
 - Amount cycled
 - Cycling conditions
 - Dangerous situations

= > Prevention?

Crashes

Number of

- Collisions
- Single bike crashes

After 59th birthday

Correction for exposure

- Collisions
- Single bike crashes

Per year after 59th birthday

Number and reporting of crashes

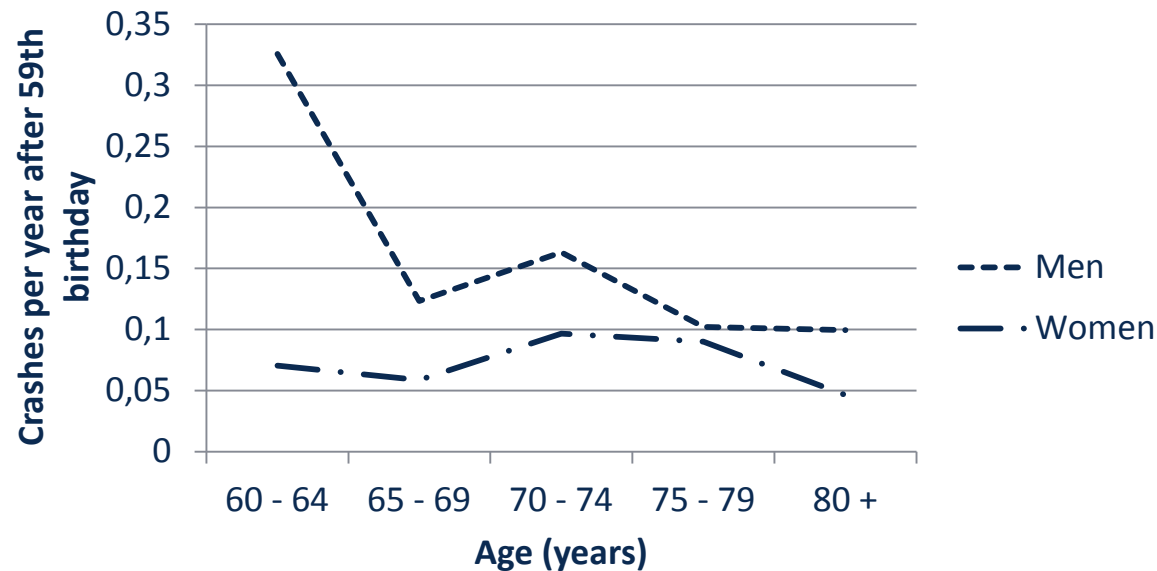
After 59th birthday:

- 60 collisions
269 persons no collision, max. 3
- 249 single-bike crashes (SBC, 81% of all crashes)
200 persons no single-bike crash, max. 20

Police was informed about

- 19% of collisions
 - 50% of collisions with cars
 - 0% of collisions with non-motorized traffic (bike, pedestrian, dog)
- 5% of single-bike crashes

Crashes: age and gender



Different effects for male and female cyclists:

- Men 60-64 with very high exposure have many crashes

⇒ Prevention: Information about risk situations?

No peak at very old age (participants)

Gender effect

= > Here only partial correlations reported,
controlled for gender

Exposure

Correlation number of accidents / year

- Estimated km/year ($r=.15$, $p=.042$)
- Measured km/day t1 (jan/feb) to t2 (jun/jul)
($r=.14$, $p=.047$, $n=212$)
- Owns racing bike ($r=.11$, $p=.011$)

Physical / medical problems

More cycling accidents:

Persons who gave up driving

- Medical reasons ($r=.30$, $p=.046$)
- Advice of doctor ($r=.48$, $p=.001$)

!!! Driving licence does not expire, no regular checkup required in Germany

German doctors do not often talk about driving

- Temporal sequence not asked, bike accident might be the cause
- Potential target group for prevention measures

Reported physical problems

More cycling accidents / year:

- More problems with motility in general ($r=.12$, $p=.039$)
- More problems with motility when cycling ($r=.05$, n.s.)
- More problems with heart / circulation in general ($r=.06$, n.s.)
- More problems with heart / circulation when cycling ($r=.13$, $p=.048$)
- No correlation with reported problems with:
 - Nerve system (very rare in sample)
 - Diabetes (rare in sample)
 - Muscle strength
 - Vision
 - Hearing in general

Hearing aid

Persons with hearing aid who do not use it in traffic

- Report hearing difficulties in spite of hearing aid ($r=.42$, $p=.032$, $n=24$)
- Hearing aid off when outside ($r=.65$, $p=.008$, $n=14$)
- Hearing aid off when speaking on the phone ($r=.52$, $p=.042$, $n=14$)
- Wrong device?
 - Ill advice?
 - Costs?
- Lack of acceptance?
- Unrealistic perception to hear well enough?

Bike course

Performance in general: uncorrelated with accidents

Zero, low positive and low negative correlations of single tasks with accidents

Problem of tests (bike course and sports tests)

- Measure performance

Performance = (abilities & skills) + ambition

Abilities & skills: positive for traffic safety

Ambition: negative for traffic safety

Any idea for a solution of this problem???

Lack of rule compliance

Cycle on the footpath ($r=.12$, $p=.035$)

Run stop signs ($r=.17$, $p=.003$)

Cycle in streets which are forbidden for all traffic ($r=.13$, $p=.028$)

Lack of care for oneself / acceptance of age

Do NOT cycle more carefully compared to when 59 years old ($r=.19$, $p=.001$)

Cycle when ice / snow ($r=.24$, $p=.001$)

(studded tires for bikes rather unknown in Germany)

Do NOT care for surface when cycling in the dark ($r=.12$, $p=.048$)

Do NOT prefer good surfaces ($r=.17$, $p=.005$)

Potential for prevention

Cyclists with hearing aids

- Economic interest of dealers

Cyclists who gave up driving for medical reasons

- Doctors?
- Confidential self-checks for drivers not accepted

Information about dangerous situations?

- Acceptance of traffic rules
- Cycling on the footpath
- Single bike crashes
 - Surfaces
 - Ice

Thank you for your attention!
Questions?

Carmen.Hagemeister@tu-dresden.de