CHEMNITZ UNIVERSITY OF TECHNOLOGY

Sport Science III
Sport Sociology/Sport Economics

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Development of Sports Activity in the Course of Life

The Role of Age, Period and Cohort Effects

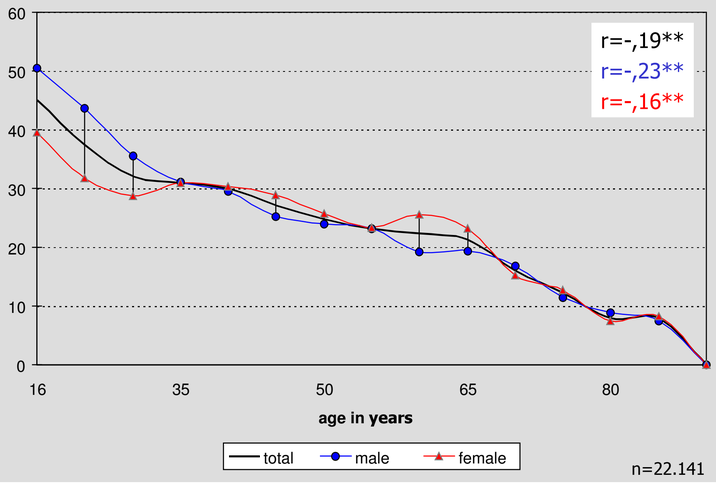
0 Summary:

On the basis of data sets of the German Socio-Economic Panel Study (GSOEP), longitudinal and multi-step cohort analyses of the development of sports activity in the course of life were conducted. According to the results, some classical findings of sport science must be revised. It is for example not true that there is a steady decrease in regular sports activity in the course of life. Not only age effects but period and cohort effects, too, have a considerable effect on the amount of regular sports activity. Period and cohort influences can even overcompensate the age effects.

1 Classical finding:

Sports involvement declines within the course of life (c.f. fig. 1).

Cross-sectional Analyses



2 Problem:

The classical finding is based on cross-sectional analyses. But in cross-sectional analyses age and cohort effect are mixed up. Thus, it is not clear to what extent differences between age groups are related to age or cohort effects. However, in ordet to predict the development of sport markets in ageing societies the relative influence of age, period and cohort effects on sports involvement of populations has to be known.

Research Design	Controlled Effects	Confunding Effects
cross-sectional analysis	period	age, cohort
longitudinal analysis	cohort	age, period
multi-step cohort analysis	age, cohort, period	-

3 Main Questions:

- How strong is the influence of age, period and cohort effects on the sports involvement of populations?
- Is sports involvement really decreasing in the course of life?
- What does that mean with regard to the development of sport markets in aging societies?

4 Methodological steps:

1. Generating a longitudinal data set out of GSOEP 1985-2001.
2. Longitudinal analyses
3. Generating a data set, designed for multi-step cohort analyses, out of GSOEP 1985-2001.
4. Multi-step cohort analyses

5 Logitudinal Analyses:

Longitudinal analyses

Sample

measure-ment	1985	1986	1988	1992	1994	1996	1997	1999	2001
age (in years)	16-24	17-25	19-27	23-31	25-33	27-35	28-36	30-38	32-40
	25-34	26-35	28-37	32-41	34-43	36-45	37-46	39-48	41-50
	35-44	36-45	38-47	42-51	44-53	46-55	47-56	49-58	51-60
	45-54	46-55	48-57	52-61	54-63	56-65	57-66	59-68	61-70
	55-64	56-65	58-67	62-71	64-73	66-75	67-76	69-78	71-80
	>64	>65	>66	>70	>72	>74	>75	>77	>79
n	3.782	3.782	3.782	3.782	3.782	3.782	3.782	3.782	3.782

Longitudinal analyses

Results
total population

measure-ment	age	n	1985	1986	1988	1992	1994	1996	1997	1999	2001	
age (in years)	16-24	684	38,7	38,5	37,1	35,1	34,2	31,1	30,8	30,6	32,5	*
	25-34	910	28,7	30,8	28,9	26,4	27,6	29,2	31,1	29,8	32,1	n.s.
	35-44	854	26,0	24,7	24,9	23,4	22,0	23,7	23,0	23,7	25,3	n.s.
	45-54	743	17,2	19,9	19,4	19,5	16,6	18,0	17,9	18,3	19,9	n.s.
	55-64	462	14,5	18,0	16,2	14,5	15,2	12,3	16,5	13,4	12,8	n.s.
	>64	129	15,5	13,2	13,2	10,1	10,9	6,2	7,8	3,9	3,1	***
n		3.782										

Among the total population the share of regular sports activity had decreased significantly in the cohort of the 16 to 24 years old people from 38,7 % in 1985 to 32,5 % in 2001. Nevertheless the share of sports activity remains relatively constant from 1996 on. From a certain point in time, the quota of sports envolved people seems to be stable in this cohort.

According to the next four cohorts, the result of the cross-sectional analyses, namely a decrease of sports activity during the course of life, cannot be verified. The quota of regularly active people in those cohorts is at the same level or had even increased over the next 16 years. Only the cohort of the more than 64 years old ones does show a statistically significant decrease of sports activity by ageing. But in this case it has to be taken into account that the members of this cohort are altogether 80 years or older in 2001. Therefore these logitudinal results imply that merely two important phases exist for the preservation of regular sports activity in the life-course: the third as well the seventh life decade. There is no considerable decrease in sports activity to be found in between. Thus, the results of the cross-sectional analyses cannot be confirmed.

However, certain variations can be found in a gender-related perspective. First, have a look to the male population. Here, a much stronger decrease in sports activity in the cohort of the 16 to 24 years old men is to be stated. Also there is a significant decrease of sports activity in the cohort of the 25 to 44 years old men.

For the female population the results are fundamentally different. Here the quota of active individuals is increasing in almost all cohorts despite growing age. That especially applies to the groups of 25-34 and 35-44 years old women. Here, the increases are even statistically significant. Only in the cohort of the over 64 years old ones sports activity decreases by ageing. Thus, for the female population only the seventh life decade represents a critical phase for the preservation of sports activity. All in all a decreasing quota of sports activity with growing age can not be found among the female population. The habit of sports activity in the life course seems to be very stable.

Longitudinal analyses

Results
men

measure-ment	age	n	1985	1986	1988	1992	1994	1996	1997	1999	2001	
age (in years)	16-24	354	45,2	47,2	45,2	38,7	37,0	34,5	32,2	31,6	31,6	***
	25-34	416	36,3	37,0	33,7	29,1	27,9	30,8	30,8	29,3	32,2	n.s.
	35-44	417	31,2	29,5	27,6	25,7	25,2	24,7	25,2	24,7	23,0	**
	45-54	375	16,8	19,5	18,4	17,3	15,5	17,6	15,7	18,1	18,9	n.s.
	55-64	190	16,8	21,1	16,8	15,8	16,8	12,1	15,3	12,6	10,0	n.s.
	>64	43	18,6	16,3	18,6	18,6	16,3	11,6	14,0	7,0	4,7	*
n		1.795										

Longitudinal analyses

Results
women

measure-ment	age	n	1985	1986	1988	1992	1994	1996	1997	1999	2001	
age (in years)	16-24	330	31,8	29,1	28,5	31,2	31,2	27,6	29,4	19,4	33,3	n.s.
	25-34	494	22,3	25,5	24,9	24,1	27,3	27,9	31,4	30,2	32,0	***
	35-44	437	21,1	20,1	22,4	21,3	19,0	22,7	20,8	22,7	27,5	*
	45-54	368	17,7	20,4	20,4	21,7	17,7	18,5	20,1	18,5	n.s.	n.s.
	55-64	272	12,9	15,8	15,8	13,6	14,0	12,5	17,3	14,0	n.s.	n.s.
	>64	86	14,0	11,6	10,5	5,8	8,1	3,5	4,7	2,3	2,3	**
n		1.987										

5 Multi-step cohort Analyses:

Multi-step cohort anlyses

Sample

cohort						
< 1920						X
1920-1929					X	X
1930-1939				X	X	
1940-1949			X	X		
1950-1959		X	X	X		
1960-1969	X	X	X			
1970-1979	X	X				
≥ 1980	X					
age groups	16-24	25-34	35-44	45-54	55-64	> 64

Multi-step cohort analyses

Analysis of Variance
total population

Source	Sum of Squares	df	Mean Square	F	Signif of F
Intercept	4267,045	1	4267,045	23980,755	,000
AGE	56,850	5	11,370	63,899	,000
COHORT	83,319	7	11,903	66,894	,000
PERIOD	2,860	5	,572	3,214	,007

R^2 = ,050

Multi-step cohort analyses

Analysis of Variance
men

Source	Sum of Sqaures	df	Mean Square	F	Signif of F
Intercept	2434,315	1	2434,315	13163,824	,000
AGE	75,696	5	15,139	81,867	,000
COHORT	34,687	7	4,955	26,796	,000
PERIOD	1,724	5	,345	1,865	,097

R^2 = ,077

Multi-step cohort analyses

Analysis of Variance
women

Source	Sum of Squares	df	Mean Square	F	Signif of F
Intercept	1822,689	1	1822,689	10839,486	,000
AGE	7,329	5	1,466	8,717	,000
COHORT	55,965	7	7,995	47,546	,000
PERIOD	3,039	5	,608	3,615	,003

R^2 = ,032

The results of the multi-step cohort analyses show that age as well as period and cohort effects have a significant influence on sports activity. According to the statistical model, cohort effects have the strongest impact.

But we have to take into consideration, that the measured cohort effect perhaps may be a spurios effect. Because of the comperatively short research period (only 16 years), some potential period effects such as changed age norms or improved sport opportunities for senior citizens could empirically have mixed up with cohort effects.

In comparison to the results for the entire population the gender specific results are characterized by some peculiarities. Thus, no significant influence of period effects can be found concerning the sports activity of men. Furthermore not the cohort, but age has by far the greatest impact among men. Concerning women age as well as cohort and period effects are statistically significant. But here, the cohort and not the age has the highest impact whether women are regularly practising sports or not. Thus, in particular effects of age in the life course of men and especially cohort effects for women are important for the development of sports activity.

7 Conclusion

Regular sports activity is not at all decreasing continiously in the course of life. Merely for men, especially young men, this classical assumption can be verified. Concerning the female population the classical assumption is to falsify. Here sports activity is stable in the course of life.

Thus, beside age effects also period and cohort effects have a major impact on sports activity.

In this connection period and cohort effects can compensate age effects, partly they can even overcompensate them as the development among women shows.

Whereas sports activity among men is mainly influenced by age effects, sports activity among women is mainly influenced by cohort effects.

It is to conclude that the classical assumption of sport science concerning a general decrease of sports activity in the course of life should not be supported any longer. Aspects of social change have an essential effect on the development of sports activity in the course of life.

Thus, there is no automatism that a ageing society leads to a decreasing sport market.

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