

The Dutch Twin Register: Growth Data on Weight and Height

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As part of a longitudinal developmental study of newborn and young Dutch twins, data on weight and height are collected. Birth weight and height are available for 3275 pairs; data on growth, for 1390 pairs.

KEY WORDS: Dutch Twin Register; weight; height; growth.

INTRODUCTION

The Dutch Twin Register was started at the Vrije Universiteit in Amsterdam in 1987. In The Netherlands, the majority of homes with a newborn baby is visited by a commercial organization shortly after the birth of the child. Parents of twins are asked by this organization to register their name and address for research purposes. Information on the parents, the twin pregnancy, the medical history of the children, and physical, motor, and behavioral development is assessed by questionnaires that are filled out by the parents when the children are about 3–6 months and 2, 3, and 4 years old. Zygosity is also assessed by questionnaire (opinion of the parents, number of placentas, chorions and amnions, and physical resemblance when children are 2 years of age). We are in the process of blood typing the older twins, but these data will not be available for some time.

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SAMPLE

Table I gives the total number of twin pairs in the register and the number of pairs from the total sample that have been included in the workshop data set. About 40% of all Dutch newborn twin pairs participate each year. This total sample is representative of all twins born in The Netherlands with respect to both zygosity and sex. The workshop sample was created by selecting those pairs for which zygosity was avail-

Table I. Number of Twin Pairs per Year

Year of birth	Total sample	Workshop sample
Before 1986	110	78
1986	111	94
1987	902	723
1988	956	495
1989	937	—
1990	259	—
Total	3275	1390

Table II. Mean Values for Gestational Age (Weeks), Weight (g), and Height (cm) at Birth for First (T1)- and Second (T2)-Born Twins^a

	MZM (N)	DZM (N)	MZF (N)	DZF (N)	DZOS (N)
(A) The whole sample (N = 3062 pairs) ^b					
Gest. age	36.5 (370)	37.3 (648)	36.7 (420)	37.3 (593)	37.2 (1031)
Weight					
T1	2452	2633	2390	2539	2622
T2	2394	2566	2341	2483	2485
Height					
T1	46.8 (297)	47.6 (516)	46.2 (343)	46.9 (476)	47.5 (804)
T2	46.6	47.6	46.0	46.9	46.7
(B) The workshop sample (N = 1378 pairs) ^c					
Gest. age	36.8 (184)	37.2 (284)	36.8 (227)	37.4 (265)	37.4 (418)
Weight					
T1	2493	2633	2399	2574	2661
T2	2424	2528	2355	2510	2501
Height					
T1	46.9 (155)	47.5 (243)	46.2 (195)	46.8 (221)	47.7 (349)
T2	46.7	47.4	46.1	46.7	46.8

^a For opposite-sex DZ twins, T1 is a boy and T2 a girl.

^b Missing cases: gestational age, 7; birth weight, 30; zygosity, 176.

^c Missing cases: gestational age, 2; birth weight, 10.

Table III. Correlations for Weight and Height at Birth^a

	MZM	(N)	DZM	(N)	MZF	(N)	DZF	(N)	DZOS	(N)
(A) The whole sample ($N = 3062$ pairs)										
Birth weight	.49	(370)	.35	(648)	.47	(420)	.48	(593)	.45	(1031)
Birth height	.71	(297)	.57	(516)	.66	(343)	.57	(476)	.59	(804)
(B) The workshop sample ($N = 1378$ pairs)										
Birth weight	.49	(184)	.33	(284)	.47	(227)	.53	(265)	.45	(418)
Birth height	.74	(155)	.46	(243)	.56	(195)	.55	(221)	.58	(349)

^a Correlations corrected for gestational age. For opposite-sex DZ twins, T1 is a boy and T2 a girl.

Table IV. Mean, Minimum and Maximum Age (Days) of Twins at Each Measurement Occasion, and Number of Pairs for Whom Data are Available

	Mean age	Min-max	N_{total}
T=1	41.94	1-756	1390
T=2	65.97	2-537	1388
T=3	92.39	5-738	1386
T=4	121.31	7-1011	1382
T=5	156.02	21-1277	1378
T=6	194.94	22-1508	1369
T=7	239.14	27-740	1350
T=8	285.19	41-874	1294
T=9	328.23	49-1089	1197
T=10	369.03	56-1434	1042
T=11	408.54	65-1528	843
T=12	437.47	85-1467	627
T=13	465.50	91-1585	442
T=14	490.74	97-1878	292
T=15	515.76	119-1716	194
T=16	519.79	137-2001	126
T=17	555.73	168-2312	85
T=18	515.03	189-1637	60
T=19	561.42	204-1499	45
T=20	550.44	224-1476	25

able and at least one growth measure (weight or height for the oldest or youngest twin of a pair).

BIRTH WEIGHT AND HEIGHT

Mean values for gestational age, birth weight, and birth height (height is not always measured shortly after birth) are given in Table II for the

total and the workshop sample. For 1570 twin pairs of the total sample, zygosity is based on the first questionnaire only; for 1529 pairs, on combined information from the first and second questionnaires. For 176 pairs zygosity could not be determined. There are no systematic differences in birth weight or height between the total and the workshop sample. For both weight and height there are significant effects of sex and zygosity (boys and DZ twins weigh more and are taller). For birth weight there also is a birth-order effect (first-born twins weigh more). In addition, there is a large influence of gestational age on both weight and height. For the total sample the correlations between gestational age and birth weight for each sex by zygosity group vary between 0.62 and 0.72, and for birth height they vary between 0.57 and 0.66. There are no systematic effects on these correlations of sex or zygosity, but for both weight and height correlations with gestational age are somewhat lower for second-born twins. Correlations between members of a pair for weight and height have therefore been corrected for gestational age, separately for first- and second-born twins. Results for the total and the workshop sample are shown in Table III. Again, there are no differences between the two samples.

GROWTH DATA FOR WEIGHT AND HEIGHT

Health of all young children in Holland is monitored by Youth Health Services (YHS) that reach between 90 and 100% of the population. Initially, children visit the YHS every 2 to 3 weeks; later, every month, every 2 months, etc. Until the second birthday height (length) is measured in the supine position. Between 0 and 15 months infants are weighed on a baby scale; young children are weighed while sitting on a special chair. With each questionnaire they receive, we ask parents to copy the weight and height data that were recorded at the YHS, together with the dates these measures were taken. Twins are nearly always measured at the same date, but the number of observations as well as the intervals between measurements can vary greatly between pairs. We defined the first measurement occasion as the first date after birth for which data are available for at least one member of a pair. For some pairs this may be the first day after birth, while for others it may be 2 years after

their birthday. Table IV gives the average number of days after birth for the first to the 20th measurement occasion.

AVAILABLE WORKSHOP DATA

Family ID, gestational age, zygosity, sex, birth weight and height, and three variables for each time point after birth: age of the pair at that time, weight, and height.