

Szakedolgozat - Farkas Lajos

Statisztika: Griechisch Erika

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Hipotézisek

1. Hüvelyi szülés után a medencefenék izmai megnyúlnak a császármetszéshez képest.
 2. Az újszülött súlya szignifikáns összefüggést mutat a medencefenék izmainak megnyúlásával. A nagyobb születési súllyal megnő a medencefenék izmainak megnyúlása.
 3. A szülések számával arányosan nő a medencefenék izmainak megnyúlása.
 4. Az anyai BMI-vel arányosan nő a medencefenék izmainak megnyúlása.
 5. A terhességi korról arányosan növekszik a medencefenék izmainak megnyúlása (mondjuk az első trimeszterbeli értékeket kellene összevetni a szülés előttivel).
 6. A szülés előtti medencefenék (36. hetes UH) megnyúlása nagyobb a szülés utáni 6 hetes kontrollhoz képest.
 7. Fiatalabb várandósoknál kisebb mértékű az izmok megnyúlása, mint az idősebbeknél
 8. Fiatal várandósoknál nagyobb a szülés előtt és a szülés után mért izomnyúlás közötti különbség, mint az idősebb várandósoknál. (jobb a regenerációs hajlam fiatalabb korban)
 9. Az izommegnyúlás mértéke korrelál a testmagassággal.
 10. Szülés módja alapján a dL_9-dL_8 értékek nőnek hüvelyi szülés esetén
- „Megnyúlnak” = delták. Abszolút érték számít.

```
d = read.csv("~/Work/Education/Statisztikai_elemzesek/FarkasLajos_noi_klinika/STAT_DB.csv")
attach(d)
summary(d)
```

```
##      BetegID      TAJ      BMI      Ek
## Beteg001: 1  Mode:logical  Min.   :16.50  Min.   :21.00
## Beteg002: 1  NA's:218      1st Qu.:21.50  1st Qu.:30.00
## Beteg003: 1      Median :23.55  Median :33.00
## Beteg004: 1      Mean   :24.60  Mean   :32.72
## Beteg005: 1      3rd Qu.:27.00  3rd Qu.:36.00
## Beteg006: 1      Max.    :54.30  Max.    :43.00
## (Other) :212      NA's    :4
##      MagM      Mag      Gr      Pa
## Min.   :1.470  Min.   :147.0  Min.   :1.00  Min.   :0.0000
## 1st Qu.:1.630  1st Qu.:163.0  1st Qu.:1.00  1st Qu.:0.0000
## Median :1.665  Median :166.5  Median :2.00  Median :1.0000
## Mean   :1.667  Mean   :166.7  Mean   :2.02  Mean   :0.9085
## 3rd Qu.:1.700  3rd Qu.:170.0  3rd Qu.:3.00  3rd Qu.:1.0000
## Max.    :1.840  Max.    :184.0  Max.    :6.00  Max.    :4.0000
## NA's    :4      NA's    :4      NA's    :65  NA's    :65
##      Cae      Sz_mod      Sz_het      Sz_suly      Tkor_1
## Min.   :0.0000      : 3  Min.   :32.00  Min.   :1900      :144
## 1st Qu.:0.0000  PVN:108  1st Qu.:39.00  1st Qu.:3140  45      : 6
## Median :0.0000  SC :107  Median :39.00  Median :3455  48      : 5
```

##	Mean	:0.7386	Mean	:39.11	Mean	:3441	51	:	4
##	3rd Qu.	:1.0000	3rd Qu.	:40.00	3rd Qu.	:3700	6+4	:	4
##	Max.	:3.0000	Max.	:41.00	Max.	:4500	40	:	3
##	NA's	:65	NA's	:5	NA's	:6	(Other):		52
##	CRL_1		L1_1		H1_1		B1_1		
##	Min.	: 1.000	Min.	:18.00	Min.	: 2.300	Min.	: 9.80	
##	1st Qu.	: 6.225	1st Qu.	:23.80	1st Qu.	: 8.125	1st Qu.	:20.40	
##	Median	:10.150	Median	:26.35	Median	:11.350	Median	:23.40	
##	Mean	:12.934	Mean	:26.55	Mean	:11.749	Mean	:23.81	
##	3rd Qu.	:18.200	3rd Qu.	:29.18	3rd Qu.	:14.450	3rd Qu.	:27.85	
##	Max.	:40.100	Max.	:38.00	Max.	:30.500	Max.	:34.90	
##	NA's	:60	NA's	:92	NA's	:92	NA's	:99	
##	C1_1		L2_1		H2_1		B2_1		
##	Min.	:12.90	Min.	: 0.00	Min.	: 3.70	Min.	:-6.50	
##	1st Qu.	:18.35	1st Qu.	:20.30	1st Qu.	:10.25	1st Qu.	:11.20	
##	Median	:21.65	Median	:24.35	Median	:14.40	Median	:18.10	
##	Mean	:22.45	Mean	:24.22	Mean	:15.50	Mean	:17.09	
##	3rd Qu.	:25.73	3rd Qu.	:28.70	3rd Qu.	:19.07	3rd Qu.	:23.40	
##	Max.	:36.10	Max.	:39.40	Max.	:43.80	Max.	:31.10	
##	NA's	:126	NA's	:92	NA's	:92	NA's	:99	
##	C2_1		Ttkg_1		dL_1		dH_1		
##	Min.	: 7.80	Min.	: 45.00	Min.	:-8.000	Min.	:-28.700	
##	1st Qu.	:17.12	1st Qu.	: 57.75	1st Qu.	:-0.475	1st Qu.	:-5.350	
##	Median	:20.55	Median	: 63.75	Median	: 2.450	Median	:-2.850	
##	Mean	:21.06	Mean	: 65.68	Mean	: 2.329	Mean	:-3.749	
##	3rd Qu.	:24.48	3rd Qu.	: 72.00	3rd Qu.	: 4.375	3rd Qu.	:-1.150	
##	Max.	:64.90	Max.	:108.00	Max.	:25.900	Max.	: 15.600	
##	NA's	:124	NA's	:150	NA's	:92	NA's	:92	
##	dB_1		dC_1		Tkor_2		CRL_2		
##	Min.	:-9.000	Min.	:-35.6000		:124	Min.	: 6.47	
##	1st Qu.	: 3.375	1st Qu.	:-1.3000	12+4	: 7	1st Qu.	:54.65	
##	Median	: 5.600	Median	: 0.9000	86	: 5	Median	:60.15	
##	Mean	: 6.659	Mean	: 0.9106	11/5	: 4	Mean	:59.70	
##	3rd Qu.	:10.500	3rd Qu.	: 4.1750	12/0	: 4	3rd Qu.	:65.53	
##	Max.	:25.400	Max.	: 12.3000	12/1	: 4	Max.	:93.20	
##	NA's	:98	NA's	:124	(Other):	70	NA's	:22	
##	L1_2		H1_2		B1_2		C1_2		
##	Min.	:14.50	Min.	:-4.60	Min.	: 5.90	Min.	: 1.8	
##	1st Qu.	:23.38	1st Qu.	:10.05	1st Qu.	:19.00	1st Qu.	:16.2	
##	Median	:25.20	Median	:12.50	Median	:22.60	Median	:20.0	
##	Mean	:25.37	Mean	:13.50	Mean	:22.65	Mean	:19.4	
##	3rd Qu.	:27.60	3rd Qu.	:15.55	3rd Qu.	:25.90	3rd Qu.	:23.9	
##	Max.	:36.10	Max.	:76.60	Max.	:62.50	Max.	:35.3	
##	NA's	:34	NA's	:35	NA's	:51	NA's	:93	
##	L2_2		H2_2		B2_2		C2_2		
##	Min.	:-4.60	Min.	: 3.40	Min.	:-7.90	Min.	: 7.70	
##	1st Qu.	:19.00	1st Qu.	:12.80	1st Qu.	:10.30	1st Qu.	:15.50	
##	Median	:22.30	Median	:17.10	Median	:14.80	Median	:19.30	
##	Mean	:22.13	Mean	:18.38	Mean	:14.72	Mean	:19.64	
##	3rd Qu.	:25.65	3rd Qu.	:23.80	3rd Qu.	:19.60	3rd Qu.	:22.60	
##	Max.	:39.70	Max.	:53.90	Max.	:34.20	Max.	:32.60	
##	NA's	:36	NA's	:35	NA's	:50	NA's	:93	
##	Ttkg_2		dL_2		dH_2		dB_2		
##	Min.	: 17.30	Min.	:-14.000	Min.	:-35.000	Min.	:-10.900	

## 1st Qu.:	59.00	1st Qu.:	0.100	1st Qu.:	-7.425	1st Qu.:	2.800
## Median :	65.00	Median :	2.300	Median :	-2.750	Median :	7.100
## Mean :	67.62	Mean :	3.492	Mean :	-4.853	Mean :	7.701
## 3rd Qu.:	74.00	3rd Qu.:	5.200	3rd Qu.:	-0.800	3rd Qu.:	12.225
## Max. :	132.00	Max. :	31.600	Max. :	51.000	Max. :	46.300
## NA's :	69	NA's :	33	NA's :	34	NA's :	48
## dC_2		Tkor_3		Suly_3		BPD_3	
## Min. :	-24.5000	:	154	Min. :	103.0	Min. :	27.30
## 1st Qu.:	-1.7000	15/5 :	6	1st Qu.:	141.0	1st Qu.:	34.00
## Median :	0.7000	112 :	5	Median :	155.0	Median :	35.72
## Mean :	-0.2408	114 :	5	Mean :	160.5	Mean :	35.87
## 3rd Qu.:	3.8000	117 :	3	3rd Qu.:	169.8	3rd Qu.:	37.60
## Max. :	12.7000	118 :	3	Max. :	275.0	Max. :	49.70
## NA's :	93	(Other):	42	NA's :	132	NA's :	8
## FRO_3		HC_3		AC_3		FEM_3	
## Min. :	33.90	Min. :	13.1	Min. :	11.6	Min. :	13.60
## 1st Qu.:	42.23	1st Qu.:	121.6	1st Qu.:	103.2	1st Qu.:	19.12
## Median :	44.10	Median :	127.5	Median :	109.0	Median :	20.30
## Mean :	44.50	Mean :	127.6	Mean :	109.5	Mean :	20.72
## 3rd Qu.:	46.29	3rd Qu.:	133.8	3rd Qu.:	115.8	3rd Qu.:	22.07
## Max. :	63.00	Max. :	178.5	Max. :	163.3	Max. :	34.40
## NA's :	8	NA's :	8	NA's :	8	NA's :	8
## L1_3		H1_3		B1_3		C1_3	
## Min. :	16.40	Min. :	0.20	Min. :	6.90	Min. :	8.70
## 1st Qu.:	22.90	1st Qu.:	9.40	1st Qu.:	18.60	1st Qu.:	17.75
## Median :	25.50	Median :	12.30	Median :	21.80	Median :	21.50
## Mean :	25.66	Mean :	13.08	Mean :	22.11	Mean :	21.74
## 3rd Qu.:	28.40	3rd Qu.:	15.60	3rd Qu.:	25.50	3rd Qu.:	25.10
## Max. :	38.00	Max. :	45.00	Max. :	34.00	Max. :	42.40
## NA's :	13	NA's :	13	NA's :	27	NA's :	63
## L2_3		H2_3		B2_3		C2_3	
## Min. :	1.60	Min. :	6.30	Min. :	-10.60	Min. :	8.80
## 1st Qu.:	19.40	1st Qu.:	12.80	1st Qu.:	9.20	1st Qu.:	16.65
## Median :	23.00	Median :	15.60	Median :	15.60	Median :	19.70
## Mean :	22.81	Mean :	16.86	Mean :	14.51	Mean :	20.23
## 3rd Qu.:	27.00	3rd Qu.:	19.60	3rd Qu.:	19.60	3rd Qu.:	22.60
## Max. :	34.70	Max. :	42.30	Max. :	30.10	Max. :	42.10
## NA's :	13	NA's :	13	NA's :	27	NA's :	63
## Ttkg_3		dL_3		dH_3		dB_3	
## Min. :	44.00	Min. :	-6.800	Min. :	-22.00	Min. :	-10.30
## 1st Qu.:	59.00	1st Qu.:	0.400	1st Qu.:	-5.60	1st Qu.:	4.60
## Median :	66.00	Median :	2.300	Median :	-3.20	Median :	7.20
## Mean :	68.72	Mean :	2.845	Mean :	-3.78	Mean :	7.60
## 3rd Qu.:	74.50	3rd Qu.:	4.500	3rd Qu.:	-1.60	3rd Qu.:	10.55
## Max. :	145.00	Max. :	23.300	Max. :	5.90	Max. :	32.20
## NA's :	39	NA's :	13	NA's :	13	NA's :	27
## dC_3		Tkor_4		Suly_4		BPD_4	
## Min. :	-14.900	:	153	Min. :	250.0	Min. :	20.17
## 1st Qu.:	-0.350	140 :	4	1st Qu.:	317.2	1st Qu.:	46.20
## Median :	1.400	144 :	3	Median :	353.5	Median :	48.57
## Mean :	1.511	149 :	3	Mean :	365.1	Mean :	48.39
## 3rd Qu.:	3.900	155 :	3	3rd Qu.:	397.8	3rd Qu.:	50.90
## Max. :	12.700	19/6 :	3	Max. :	539.0	Max. :	62.20
## NA's :	63	(Other):	49	NA's :	128	NA's :	2

##	FRO_4	HC_4	AC_4	FEMU_4
##	Min. :50.60	Min. : 39.3	Min. : 64.0	Min. :23.90
##	1st Qu.:59.75	1st Qu.:169.6	1st Qu.:148.2	1st Qu.:31.38
##	Median :62.50	Median :177.1	Median :156.8	Median :33.10
##	Mean :62.39	Mean :176.9	Mean :157.0	Mean :33.39
##	3rd Qu.:64.80	3rd Qu.:184.3	3rd Qu.:164.9	3rd Qu.:35.17
##	Max. :78.40	Max. :219.6	Max. :209.3	Max. :46.60
##	NA's :3	NA's :2	NA's :2	NA's :2
##	L1_4	H1_4	B1_4	C1_4
##	Min. : 15.50	Min. : 3.20	Min. : 2.50	Min. :10.70
##	1st Qu.: 22.90	1st Qu.: 9.70	1st Qu.:17.80	1st Qu.:18.85
##	Median : 26.00	Median :12.60	Median :21.35	Median :21.20
##	Mean : 26.58	Mean :12.89	Mean :21.20	Mean :21.67
##	3rd Qu.: 28.20	3rd Qu.:15.50	3rd Qu.:25.18	3rd Qu.:23.50
##	Max. :226.50	Max. :26.50	Max. :34.00	Max. :40.70
##	NA's :7	NA's :7	NA's :12	NA's :49
##	L2_4	H2_4	B2_4	C2_4
##	Min. :-6.20	Min. : 3.50	Min. :-11.60	Min. :11.3
##	1st Qu.:18.80	1st Qu.:13.30	1st Qu.: 7.80	1st Qu.:17.8
##	Median :23.00	Median :15.80	Median : 13.10	Median :20.1
##	Mean :22.57	Mean :16.83	Mean : 12.63	Mean :20.5
##	3rd Qu.:26.50	3rd Qu.:19.80	3rd Qu.: 18.20	3rd Qu.:22.8
##	Max. :38.90	Max. :36.50	Max. : 31.70	Max. :30.5
##	NA's :7	NA's :7	NA's :13	NA's :49
##	Ttkg_4	dL_4	dH_4	dB_4
##	Min. : 45.00	Min. :-10.600	Min. :-19.300	Min. :-8.200
##	1st Qu.: 61.00	1st Qu.: 0.850	1st Qu.: -6.025	1st Qu.: 5.100
##	Median : 68.00	Median : 2.750	Median : -3.800	Median : 7.900
##	Mean : 71.06	Mean : 3.998	Mean : -3.920	Mean : 8.591
##	3rd Qu.: 78.00	3rd Qu.: 5.025	3rd Qu.: -1.500	3rd Qu.:11.000
##	Max. :148.00	Max. :203.200	Max. : 10.100	Max. :32.200
##	NA's :21	NA's :6	NA's :6	NA's :11
##	dC_4	Tkor_5	Suly_5	BPD_5
##	Min. :-11.100	:153	Min. : 516.0	Min. :29.60
##	1st Qu.: -1.000	176 : 4	1st Qu.: 641.5	1st Qu.:58.77
##	Median : 0.900	164 : 3	Median : 695.5	Median :61.50
##	Mean : 1.166	170 : 3	Mean : 722.5	Mean :61.40
##	3rd Qu.: 2.675	171 : 3	3rd Qu.: 795.8	3rd Qu.:63.90
##	Max. : 18.700	23/5 : 3	Max. :1122.0	Max. :74.53
##	NA's :48	(Other): 49	NA's :130	NA's :2
##	FRO_5	HC_5	AC_5	FEMU_5
##	Min. : 58.00	Min. :115.2	Min. : 22.3	Min. :34.30
##	1st Qu.: 76.38	1st Qu.:215.9	1st Qu.:192.7	1st Qu.:42.50
##	Median : 79.05	Median :223.8	Median :201.2	Median :44.33
##	Mean : 114.00	Mean :223.3	Mean :200.3	Mean :44.62
##	3rd Qu.: 81.60	3rd Qu.:232.1	3rd Qu.:208.5	3rd Qu.:46.50
##	Max. :7608.00	Max. :267.2	Max. :245.2	Max. :54.60
##	NA's :2	NA's :2	NA's :2	NA's :2
##	L1_5	H1_5	B1_5	C1_5
##	Min. :13.10	Min. : 3.20	Min. : 3.80	Min. : 11.20
##	1st Qu.:22.70	1st Qu.:10.00	1st Qu.:17.68	1st Qu.: 17.70
##	Median :25.60	Median :12.50	Median :21.50	Median : 20.80
##	Mean :25.94	Mean :12.59	Mean :21.48	Mean : 21.61
##	3rd Qu.:28.60	3rd Qu.:15.20	3rd Qu.:25.43	3rd Qu.: 23.80

##	Max.	:39.60	Max.	:24.00	Max.	:37.90	Max.	:118.60
##	NA's	:13	NA's	:13	NA's	:14	NA's	:41
##	L2_5		H2_5		B2_5		C2_5	
##	Min.	:-4.40	Min.	: 2.70	Min.	:-17.30	Min.	: 9.0
##	1st Qu.:	18.40	1st Qu.:	13.70	1st Qu.:	7.95	1st Qu.:	17.7
##	Median	:22.00	Median	:16.80	Median	: 13.10	Median	:20.4
##	Mean	:22.22	Mean	:17.14	Mean	: 12.68	Mean	:20.8
##	3rd Qu.:	25.80	3rd Qu.:	19.80	3rd Qu.:	17.70	3rd Qu.:	23.0
##	Max.	:44.20	Max.	:31.90	Max.	: 35.10	Max.	:35.3
##	NA's	:13	NA's	:13	NA's	:14	NA's	:41
##	Ttkg_5		dL_5		dH_5		dB_5	
##	Min.	: 49.00	Min.	:-16.200	Min.	:-21.800	Min.	:-11.20
##	1st Qu.:	63.00	1st Qu.:	1.600	1st Qu.:	-7.100	1st Qu.:	5.90
##	Median	: 70.00	Median	: 3.400	Median	:-4.400	Median	: 8.35
##	Mean	: 73.08	Mean	: 3.721	Mean	:-4.546	Mean	: 8.80
##	3rd Qu.:	80.00	3rd Qu.:	5.600	3rd Qu.:	-2.300	3rd Qu.:	11.30
##	Max.	:150.00	Max.	: 31.200	Max.	: 10.500	Max.	: 35.80
##	NA's	:31	NA's	:13	NA's	:13	NA's	:14
##	dC_5		Tkor_6		Suly_6		BPD_6	
##	Min.	: -9.8000		:153	Min.	: 920	Min.	:57.20
##	1st Qu.:	-2.4250	192	: 3	1st Qu.:	1212	1st Qu.:	72.20
##	Median	: 0.2500	194	: 3	Median	:1326	Median	:75.29
##	Mean	: 0.8296	200	: 3	Mean	:1365	Mean	:75.02
##	3rd Qu.:	2.8500	214	: 3	3rd Qu.:	1473	3rd Qu.:	77.90
##	Max.	:100.5000	27/6	: 3	Max.	:2532	Max.	:98.20
##	NA's	:42	(Other):	50	NA's	:130	NA's	:3
##	FRO_6		HC_6		AC_6		FEMU_6	
##	Min.	: 78.00	Min.	: 26.4	Min.	: 32.5	Min.	: 41.60
##	1st Qu.:	92.30	1st Qu.:	263.5	1st Qu.:	236.8	1st Qu.:	53.00
##	Median	: 94.50	Median	:270.5	Median	:247.2	Median	: 55.00
##	Mean	: 94.55	Mean	:269.7	Mean	:246.7	Mean	: 56.03
##	3rd Qu.:	97.30	3rd Qu.:	278.9	3rd Qu.:	257.5	3rd Qu.:	56.78
##	Max.	:108.20	Max.	:311.0	Max.	:323.4	Max.	:263.10
##	NA's	:3	NA's	:3	NA's	:3	NA's	:3
##	L1_6		H1_6		B1_6		C1_6	
##	Min.	:15.00	Min.	: 3.70	Min.	: 9.2	Min.	:10.20
##	1st Qu.:	23.23	1st Qu.:	10.10	1st Qu.:	17.3	1st Qu.:	17.55
##	Median	:25.75	Median	:12.20	Median	:21.3	Median	:20.40
##	Mean	:25.87	Mean	:12.55	Mean	:21.0	Mean	:20.84
##	3rd Qu.:	28.70	3rd Qu.:	14.90	3rd Qu.:	25.2	3rd Qu.:	23.20
##	Max.	:38.90	Max.	:24.90	Max.	:34.2	Max.	:36.60
##	NA's	:18	NA's	:17	NA's	:17	NA's	:27
##	L2_6		H2_6		B2_6		C2_6	
##	Min.	: 9.70	Min.	: 6.30	Min.	:-9.60	Min.	: 9.20
##	1st Qu.:	19.50	1st Qu.:	13.30	1st Qu.:	7.30	1st Qu.:	17.10
##	Median	:22.55	Median	:16.20	Median	:12.50	Median	:19.80
##	Mean	:22.65	Mean	:16.89	Mean	:11.96	Mean	:20.13
##	3rd Qu.:	26.15	3rd Qu.:	19.52	3rd Qu.:	16.95	3rd Qu.:	22.77
##	Max.	:39.80	Max.	:31.50	Max.	:29.20	Max.	:37.70
##	NA's	:18	NA's	:18	NA's	:18	NA's	:28
##	Ttkg_6		dL_6		dH_6		dB_6	
##	Min.	: 51.00	Min.	:-21.200	Min.	:-19.200	Min.	:-3.700
##	1st Qu.:	65.00	1st Qu.:	1.200	1st Qu.:	-6.575	1st Qu.:	6.300
##	Median	: 73.00	Median	: 3.000	Median	:-3.950	Median	: 8.850

## Mean	: 75.17	Mean	: 3.184	Mean	: -4.230	Mean	: 9.059
## 3rd Qu.:	82.00	3rd Qu.:	5.000	3rd Qu.:	-2.125	3rd Qu.:	11.400
## Max.	:153.00	Max.	: 25.600	Max.	: 16.800	Max.	:27.000
## NA's	:24	NA's	:16	NA's	:16	NA's	:16
## dC_6		Tkor_7		Suly_7		BPD_7	
## Min.	:-15.8000		:154	Min.	:1567	Min.	:69.50
## 1st Qu.:	-1.6250	31/2	: 4	1st Qu.:	1903	1st Qu.:	82.15
## Median	: 0.8000	226	: 3	Median	:2052	Median	:85.60
## Mean	: 0.8099	238	: 3	Mean	:2104	Mean	:85.24
## 3rd Qu.:	3.1000	32/2	: 3	3rd Qu.:	2267	3rd Qu.:	87.82
## Max.	: 21.7000	34/0	: 3	Max.	:3100	Max.	:98.30
## NA's	:26	(Other):	48	NA's	:133	NA's	:7
## FRO_7		HC_7		AC_7		FEMU_7	
## Min.	: 11.3	Min.	: 9.39	Min.	:179.4	Min.	:51.20
## 1st Qu.:	103.0	1st Qu.:	297.15	1st Qu.:	278.6	1st Qu.:	60.80
## Median	:106.3	Median	:304.30	Median	:289.4	Median	:63.10
## Mean	:105.6	Mean	:302.62	Mean	:289.6	Mean	:63.31
## 3rd Qu.:	109.3	3rd Qu.:	312.50	3rd Qu.:	302.6	3rd Qu.:	65.55
## Max.	:119.1	Max.	:345.30	Max.	:363.6	Max.	:74.96
## NA's	:7	NA's	:7	NA's	:7	NA's	:7
## L1_7		H1_7		B1_7		C1_7	
## Min.	:16.90	Min.	: 4.10	Min.	: 4.10	Min.	:11.20
## 1st Qu.:	22.95	1st Qu.:	10.70	1st Qu.:	16.80	1st Qu.:	17.70
## Median	:26.05	Median	:12.50	Median	:20.40	Median	:20.20
## Mean	:26.34	Mean	:13.42	Mean	:20.36	Mean	:20.95
## 3rd Qu.:	29.27	3rd Qu.:	16.50	3rd Qu.:	24.00	3rd Qu.:	23.90
## Max.	:42.10	Max.	:23.30	Max.	:39.00	Max.	:41.00
## NA's	:16	NA's	:16	NA's	:16	NA's	:28
## L2_7		H2_7		B2_7		C2_7	
## Min.	: 5.30	Min.	: 6.80	Min.	:-8.100	Min.	: 8.00
## 1st Qu.:	19.10	1st Qu.:	14.43	1st Qu.:	6.625	1st Qu.:	17.30
## Median	:22.30	Median	:17.50	Median	:12.300	Median	:19.95
## Mean	:22.76	Mean	:17.62	Mean	:11.497	Mean	:20.41
## 3rd Qu.:	25.98	3rd Qu.:	20.30	3rd Qu.:	16.875	3rd Qu.:	22.95
## Max.	:38.50	Max.	:33.00	Max.	:31.200	Max.	:34.80
## NA's	:16	NA's	:16	NA's	:16	NA's	:28
## Ttkg_7		dL_7		dH_7		dB_7	
## Min.	: 55.00	Min.	:-6.500	Min.	:-18.200	Min.	:-7.300
## 1st Qu.:	67.00	1st Qu.:	1.500	1st Qu.:	-6.275	1st Qu.:	5.325
## Median	: 75.00	Median	: 3.450	Median	:-3.700	Median	: 8.400
## Mean	: 77.35	Mean	: 3.582	Mean	: -4.198	Mean	: 8.866
## 3rd Qu.:	85.00	3rd Qu.:	5.175	3rd Qu.:	-2.100	3rd Qu.:	12.200
## Max.	:155.00	Max.	:21.100	Max.	: 3.700	Max.	:28.400
## NA's	:23	NA's	:16	NA's	:16	NA's	:16
## dC_7		Tkor_8		Suly_8		BPD_8	
## Min.	:-8.8000		:157	Min.	:2314	Min.	: 49.40
## 1st Qu.:	-1.4500	36/3	: 4	1st Qu.:	2776	1st Qu.:	89.60
## Median	: 0.8000	240	: 3	Median	:2990	Median	: 91.80
## Mean	: 0.5377	37/3	: 3	Mean	:2991	Mean	: 92.00
## 3rd Qu.:	2.5000	238	: 2	3rd Qu.:	3147	3rd Qu.:	94.96
## Max.	:17.6000	250	: 2	Max.	:3804	Max.	:105.90
## NA's	:27	(Other):	47	NA's	:132	NA's	:11
## FRO_8		HC_8		AC_8		FEMU_8	
## Min.	: 11.2	Min.	: 43.6	Min.	: 11.3	Min.	: 30.70

##	1st Qu.:	110.0	1st Qu.:	319.3	1st Qu.:	317.5	1st Qu.:	68.80
##	Median :	113.1	Median :	327.6	Median :	326.0	Median :	70.90
##	Mean :	112.1	Mean :	328.4	Mean :	320.4	Mean :	71.98
##	3rd Qu.:	116.7	3rd Qu.:	336.6	3rd Qu.:	338.3	3rd Qu.:	73.30
##	Max. :	219.4	Max. :	915.3	Max. :	371.5	Max. :	298.80
##	NA's :	11	NA's :	11	NA's :	11	NA's :	12
##	L1_8		H1_8		B1_8		C1_8	
##	Min. :	16.20	Min. :	2.30	Min. :	-1.30	Min. :	0.20
##	1st Qu.:	23.80	1st Qu.:	11.75	1st Qu.:	15.57	1st Qu.:	17.60
##	Median :	26.60	Median :	14.00	Median :	18.95	Median :	20.00
##	Mean :	26.85	Mean :	14.53	Mean :	19.24	Mean :	20.74
##	3rd Qu.:	29.70	3rd Qu.:	17.12	3rd Qu.:	22.80	3rd Qu.:	23.90
##	Max. :	43.20	Max. :	28.20	Max. :	45.10	Max. :	39.00
##	NA's :	18	NA's :	18	NA's :	18	NA's :	22
##	L2_8		H2_8		B2_8		C2_8	
##	Min. :	11.40	Min. :	-6.20	Min. :	-9.00	Min. :	9.40
##	1st Qu.:	20.30	1st Qu.:	14.07	1st Qu.:	6.25	1st Qu.:	17.20
##	Median :	24.10	Median :	17.10	Median :	10.80	Median :	19.80
##	Mean :	23.86	Mean :	17.34	Mean :	10.60	Mean :	20.01
##	3rd Qu.:	27.15	3rd Qu.:	20.20	3rd Qu.:	15.80	3rd Qu.:	22.45
##	Max. :	44.90	Max. :	33.30	Max. :	36.80	Max. :	35.50
##	NA's :	18	NA's :	18	NA's :	19	NA's :	23
##	Ttkg_8		dL_8		dH_8		dB_8	
##	Min. :	54.00	Min. :	-6.000	Min. :	-13.300	Min. :	-3.700
##	1st Qu.:	70.00	1st Qu.:	1.100	1st Qu.:	-4.900	1st Qu.:	5.950
##	Median :	77.50	Median :	2.600	Median :	-2.600	Median :	8.400
##	Mean :	78.88	Mean :	2.993	Mean :	-2.811	Mean :	8.691
##	3rd Qu.:	86.00	3rd Qu.:	4.800	3rd Qu.:	-1.100	3rd Qu.:	10.600
##	Max. :	156.00	Max. :	14.500	Max. :	21.600	Max. :	23.800
##	NA's :	31	NA's :	18	NA's :	18	NA's :	18
##	dC_8		X		L1_9		H1_9	
##	Min. :	-19.1000	:	217	Min. :	13.30	Min. :	3.60
##	1st Qu.:	-1.4000	---:	1	1st Qu.:	21.60	1st Qu.:	10.70
##	Median :	0.9000			Median :	24.80	Median :	13.40
##	Mean :	0.8342			Mean :	24.59	Mean :	13.57
##	3rd Qu.:	3.0000			3rd Qu.:	27.40	3rd Qu.:	16.40
##	Max. :	22.9000			Max. :	40.60	Max. :	23.90
##	NA's :	22			NA's :	65	NA's :	65
##	B1_9		C1_9		L2_9		H2_9	
##	Min. :	-0.80	Min. :	3.90	Min. :	9.10	Min. :	6.30
##	1st Qu.:	17.90	1st Qu.:	18.38	1st Qu.:	17.20	1st Qu.:	13.60
##	Median :	20.90	Median :	21.30	Median :	21.70	Median :	16.10
##	Mean :	20.74	Mean :	21.39	Mean :	21.72	Mean :	17.07
##	3rd Qu.:	24.50	3rd Qu.:	24.00	3rd Qu.:	25.80	3rd Qu.:	20.60
##	Max. :	37.30	Max. :	42.70	Max. :	40.80	Max. :	29.30
##	NA's :	65	NA's :	70	NA's :	65	NA's :	65
##	B2_9		C2_9		Ttkg_9		dL_9	
##	Min. :	-18.2	Min. :	-0.50	Min. :	48.00	Min. :	-5.800
##	1st Qu.:	6.4	1st Qu.:	16.77	1st Qu.:	61.00	1st Qu.:	0.600
##	Median :	13.6	Median :	18.85	Median :	70.00	Median :	2.800
##	Mean :	11.6	Mean :	19.34	Mean :	73.74	Mean :	2.875
##	3rd Qu.:	17.6	3rd Qu.:	23.10	3rd Qu.:	83.00	3rd Qu.:	5.100
##	Max. :	28.9	Max. :	31.00	Max. :	172.00	Max. :	11.600
##	NA's :	65	NA's :	66	NA's :	130	NA's :	65

##	dH_9	dB_9	dC_9
##	Min. : -23.600	Min. : -5.500	Min. : -26.700
##	1st Qu.: -6.000	1st Qu.: 5.700	1st Qu.: -1.200
##	Median : -2.900	Median : 8.800	Median : 1.700
##	Mean : -3.494	Mean : 9.135	Mean : 1.476
##	3rd Qu.: -0.400	3rd Qu.: 12.100	3rd Qu.: 3.800
##	Max. : 6.000	Max. : 32.300	Max. : 22.800
##	NA's : 65	NA's : 65	NA's : 65

Magyarázat

Mag	Anyai magasság (cm)
Gr	Terhességek száma
Pa	Hüvelyi szülések száma
Cae	Császármetszések száma
Sz_mod	Szülés módja: PVN=hüvelyi, SC=császár
Sz_het	Szüléskor betöltött terhességi hetek száma
Sz_suly	Újszülött tömege
Tkor_	Terhességi kor napban kifejezve *-dik méréskor
CRL_	Ülőméret *-dik méréskor
BPD_	Biparietalis distance *-dik megjelenéskor
L1_; H1_...	Méreték nyugalomban (mm)
L2_; H2_...	Méreték hasprésre (mm)
Ttkg_	Anyai testtömeg -dik méréskor (kg)
dL_; dH_*	L1_ - L2_; H1_ - H2_...
Suly_	Magzat becsült tömege *-dik megjelenéskor

1. Hüvelyi szülés után a medencefenék izmai megnyúlnak a császármetszéshez képest.

```
csoport = Sz_mod  
table(csoport)
```

```
## csoport  
##      PVN  SC  
##    3 108 107
```

```
valt = abs(dL_9)  
summary(valt[csoport=="PVN"])
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's  
##    0.200  2.700   4.300  4.753  6.600  11.300     32
```

```
summary(valt[csoport=="SC"])
```

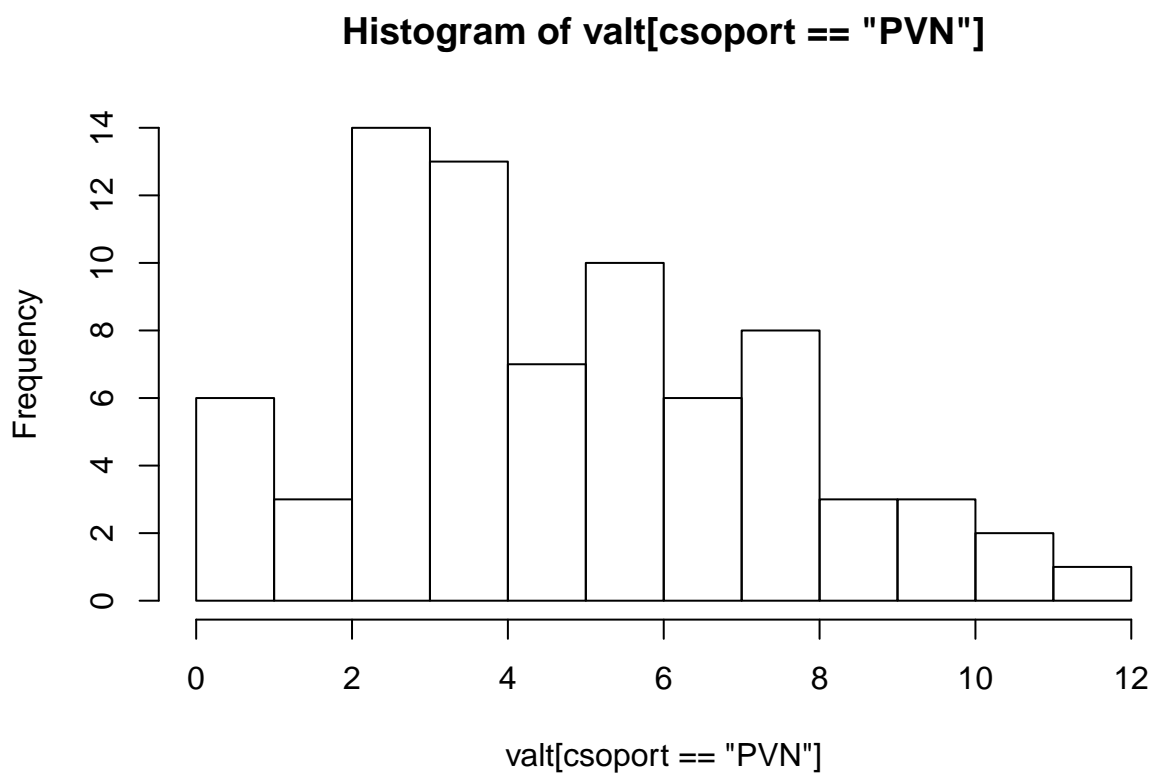
```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's  
##    0.000  0.900   2.200  2.719  4.100  11.600     30
```

```
sd(valt,na.rm=TRUE)
```

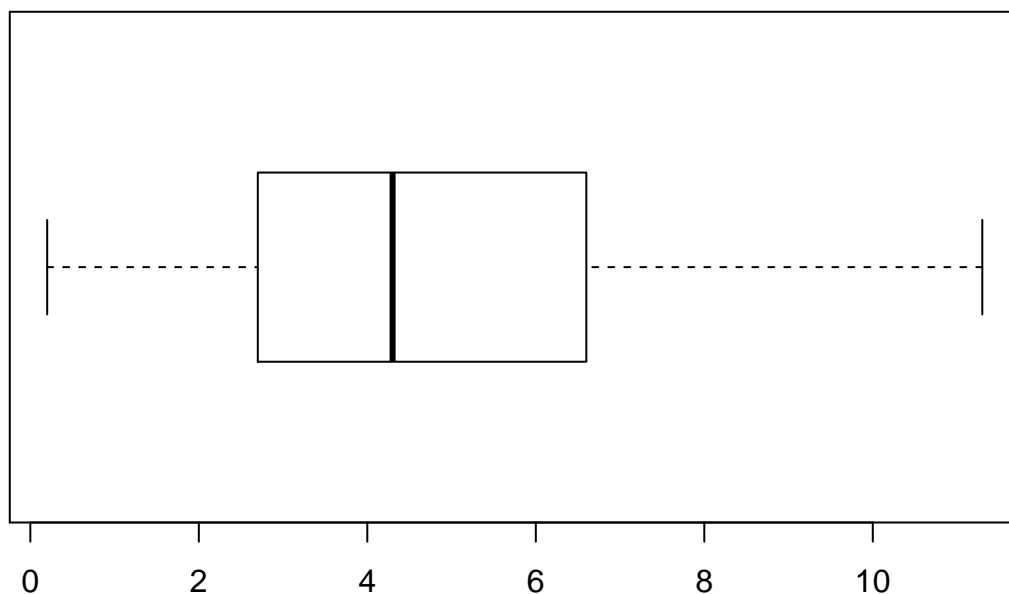
```
## [1] 2.646146
```

```
#sd(kulonbseg[csoport=="SC"])
```

```
hist(valt[csoport=="PVN"])
```

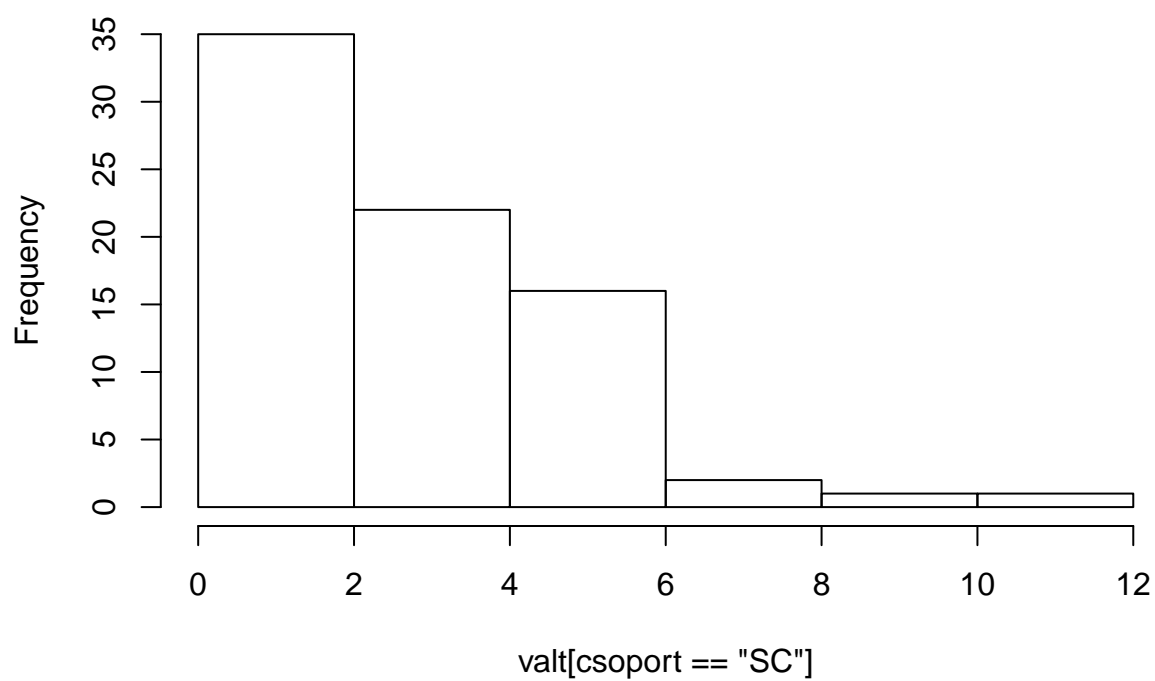


```
boxplot(valt[csoport=="PVN"],horizontal=T)
```

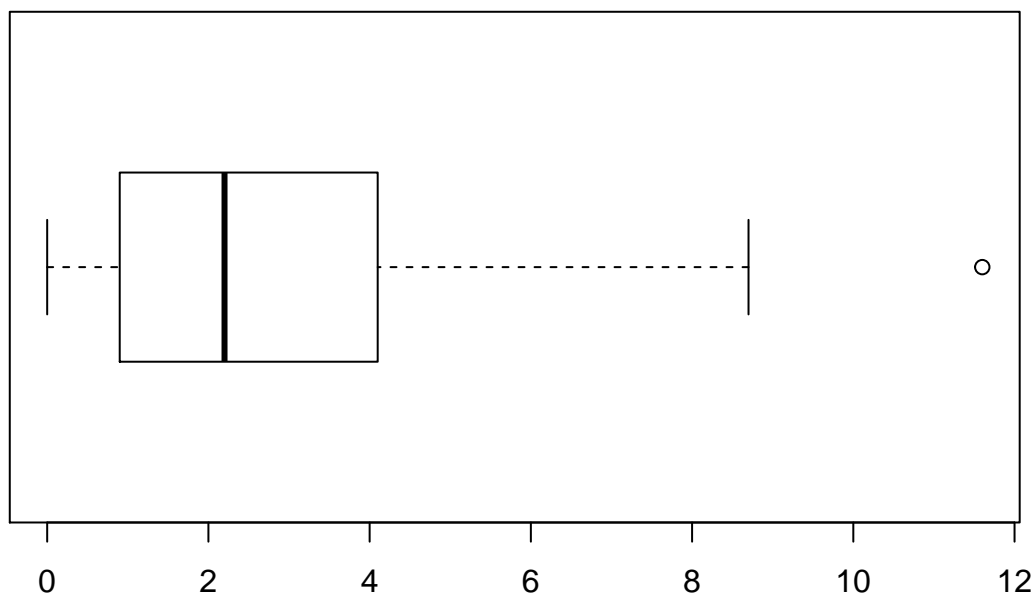


```
hist(val[csoport=="SC"])
```

Histogram of val[csoport == "SC"]



```
boxplot(val[csoport=="SC"],horizontal=T)
```

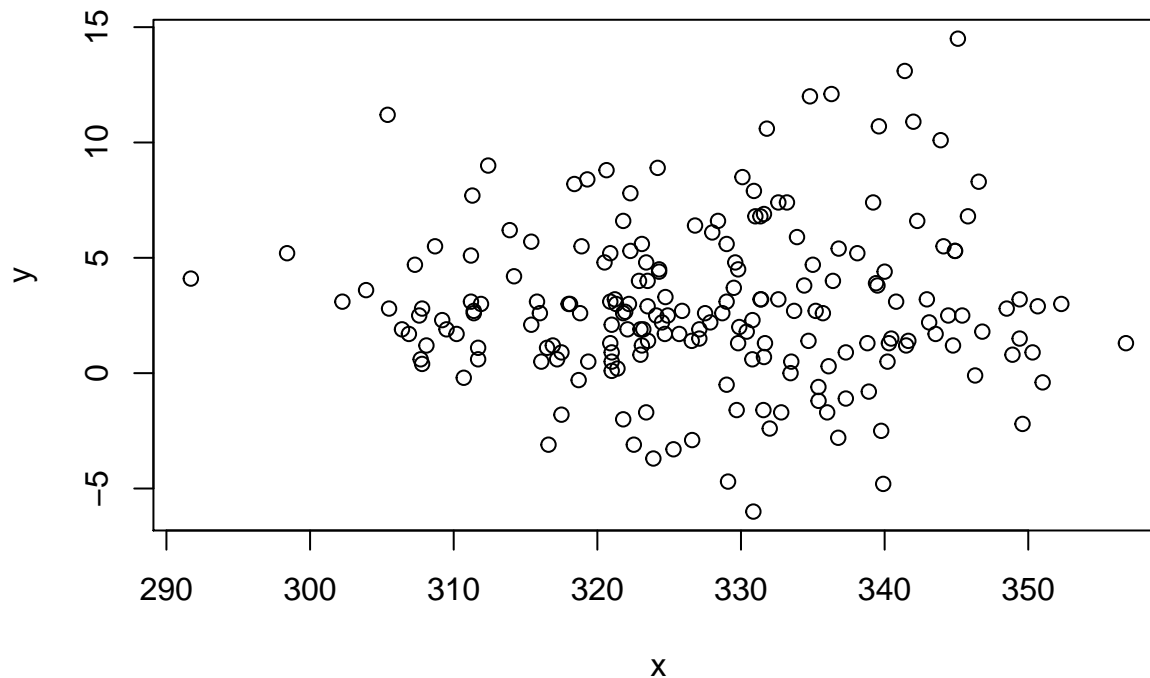


```
t.test(valt~csoport,alternative = "greater")
```

```
##
## Welch Two Sample t-test
##
## data:  valt by csoport
## t = 5.1286, df = 144.841, p-value = 4.605e-07
## alternative hypothesis: true difference in means is greater than 0
## 95 percent confidence interval:
##  1.377408      Inf
## sample estimates:
## mean in group PVN  mean in group SC
##           4.753421           2.719481
```

2. Az újszülött súlya szignifikáns összefüggést mutat a medencefenék izmainak megnyúlásával. A nagyobb születési súllyal megnő a medencefenék izmainak megnyúlása.

```
x = HC_8[HC_8<900 & HC_8>200]
y = dL_8[HC_8<900 & HC_8>200]
plot(x,y)
```



```
cor.test(x,y)
```

```
##
## Pearson's product-moment correlation
##
## data: x and y
## t = 0.259, df = 195, p-value = 0.7959
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.1215666 0.1579305
## sample estimates:
## cor
## 0.01854422
```

3. A szülések számával arányosan nő a medencefenék izmainak megnyúlása.

```
csoport = Pa + Cae
table(csoport)
```

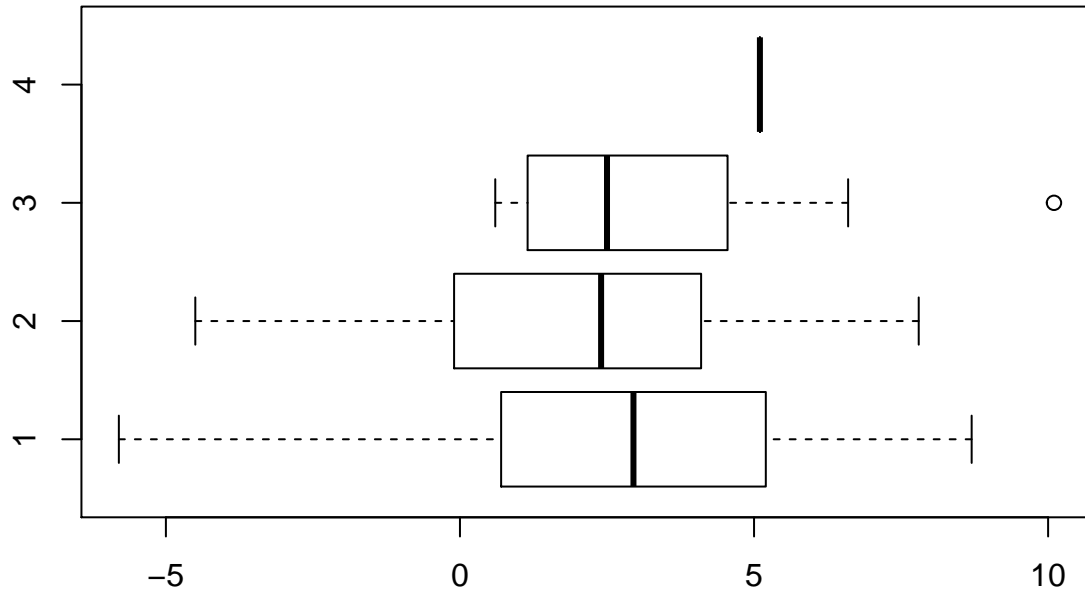
```
## csoport
## 1 2 3 4
## 73 62 17 1
```

```
x = dL_9
csoport
```

```
## [1] 2 1 2 1 1 NA 2 NA 1 3 1 2 2 2 2 1 1 1 3 1 2 1 1
## [24] 2 1 2 2 2 2 2 1 1 2 2 2 2 1 1 2 2 3 2 2 1 1 1
## [47] 3 2 2 3 1 2 2 3 2 3 NA 2 2 2 1 1 2 1 1 1 1 2
## [70] 1 1 1 1 1 3 1 3 1 1 1 2 1 2 3 1 1 3 1 2 1 2 1
```

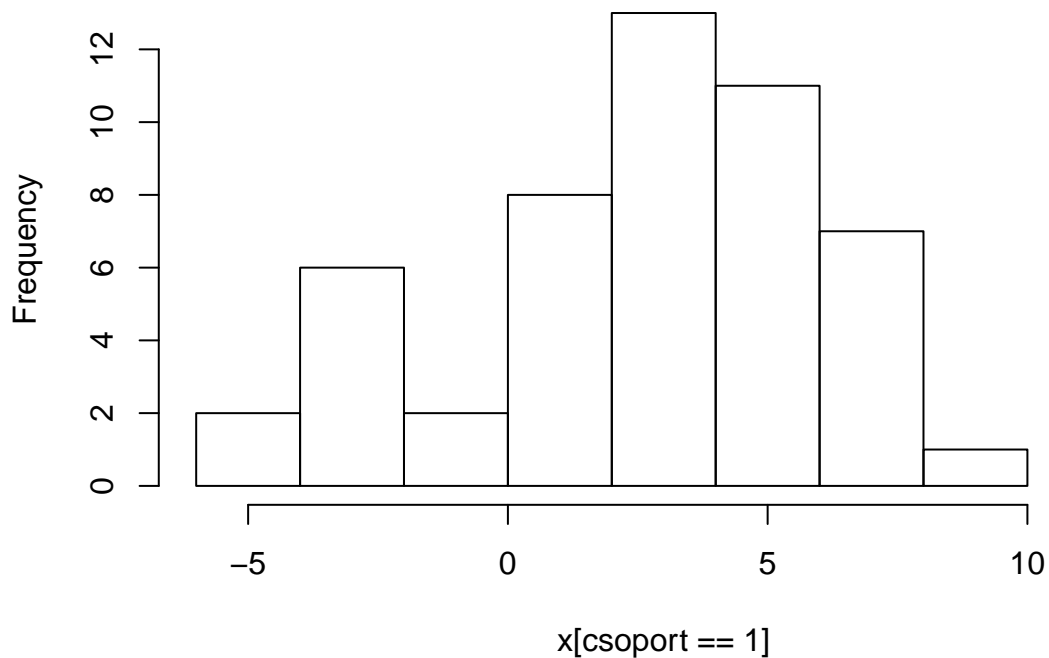
```
## [93] 3 2 1 1 1 2 1 2 2 1 2 2 1 1 NA 1 NA 2 NA NA NA NA NA
## [116] NA NA 2 NA NA NA 3 NA NA NA NA NA NA NA NA NA NA NA NA NA
## [139] NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA
## [162] NA NA NA NA NA NA NA 2 2 2 NA 1 2 2 3 1 NA 2 1 2 1 1 1
## [185] 1 2 4 1 1 3 1 1 2 1 3 1 2 2 1 1 1 2 1 1 1 1 2
## [208] 2 1 2 1 2 2 3 NA 2 NA 1
```

```
boxplot(x~csoport,horizontal=T)
```



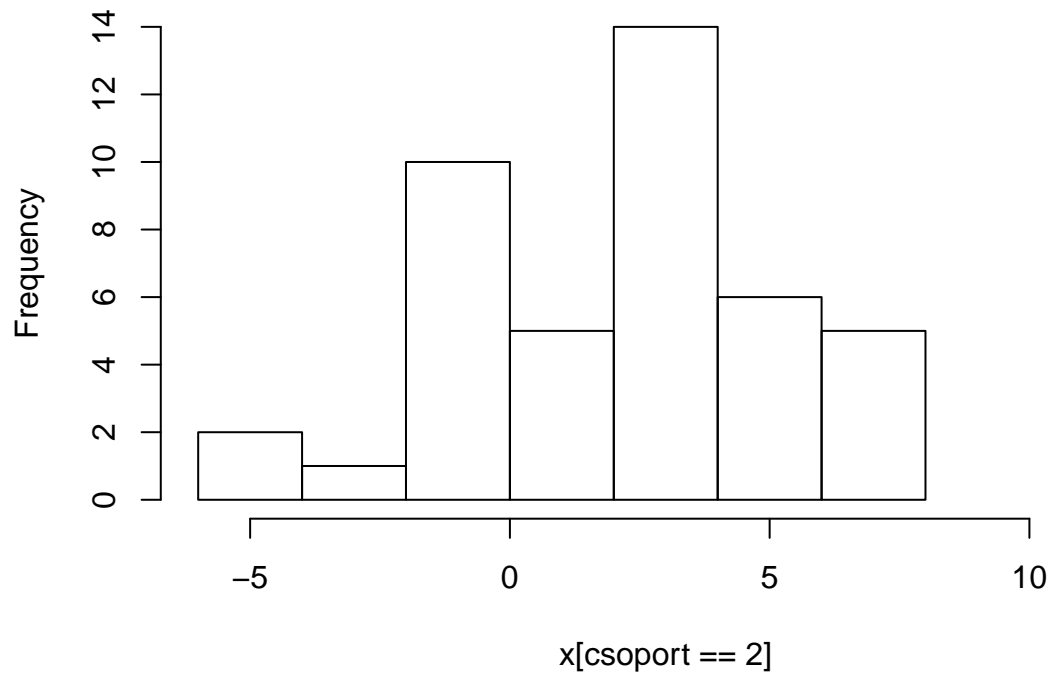
```
hist(x[csoport==1],xlim=c(-6,12))
```

Histogram of x[csoport == 1]



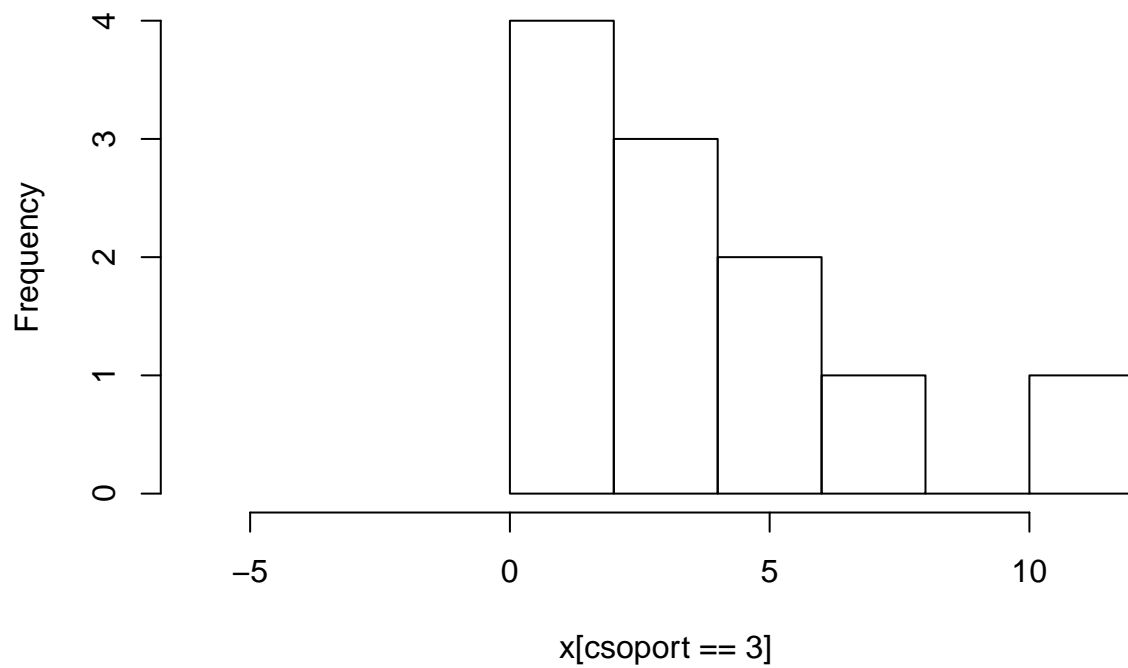
```
hist(x[csoport==2],xlim=c(-6,12))
```

Histogram of x[csoport == 2]

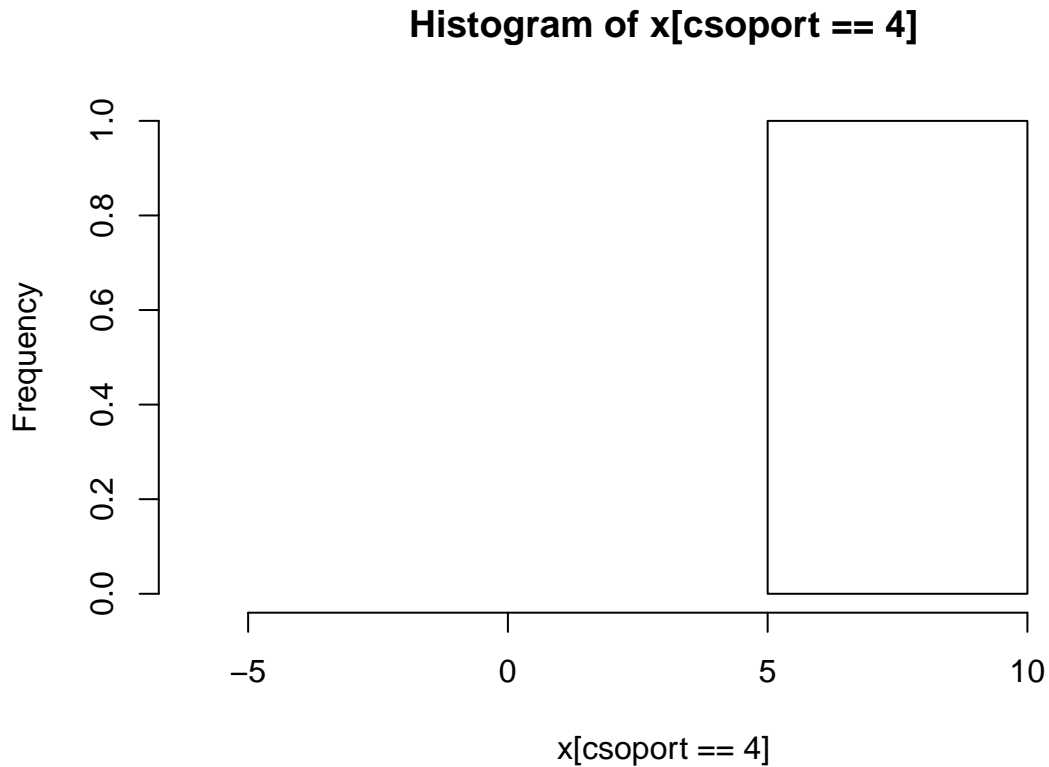


```
hist(x[csoport==3],xlim=c(-6,12))
```

Histogram of x[csoport == 3]



```
hist(x[csoport==4],xlim=c(-6,12))
```

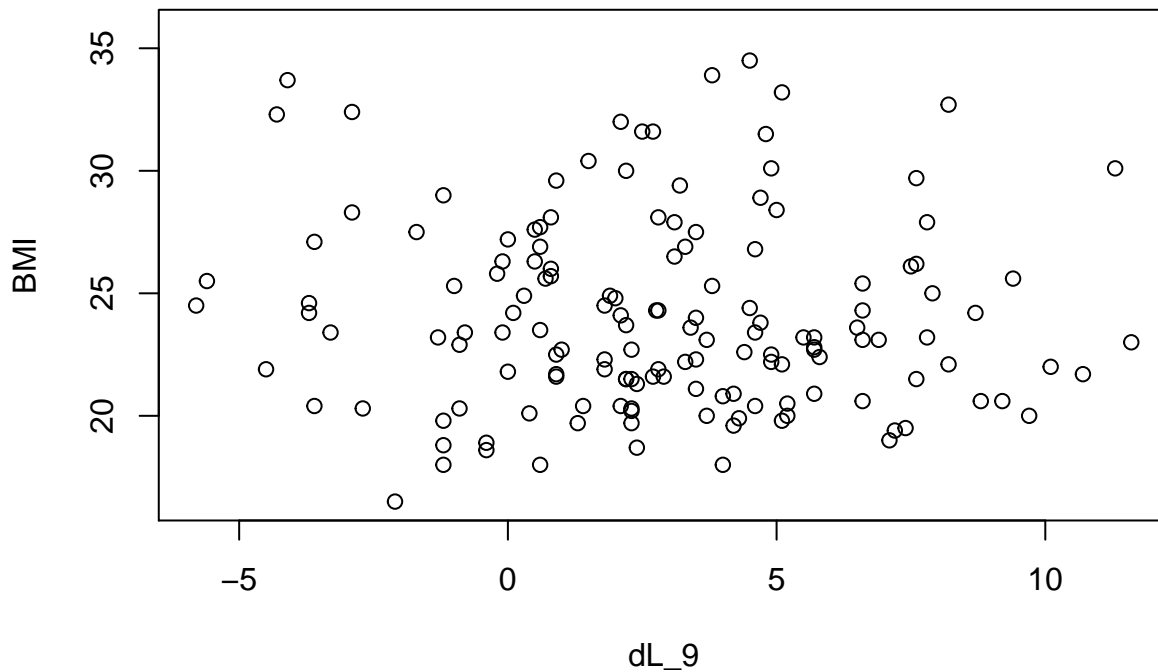


```
fit = aov(x~csoport)
summary(fit)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## csoport      1   3.8    3.775    0.335  0.564
## Residuals   103 1162.0   11.281
## 113 observations deleted due to missingness
```

4. Az anyai BMI-vel arányosan nő a medencefenék izmainak megnyúlása.

```
x = dL_9[BMI<37]
y = BMI[BMI<37]
plot(x,y,xlab="dL_9",ylab="BMI")
```

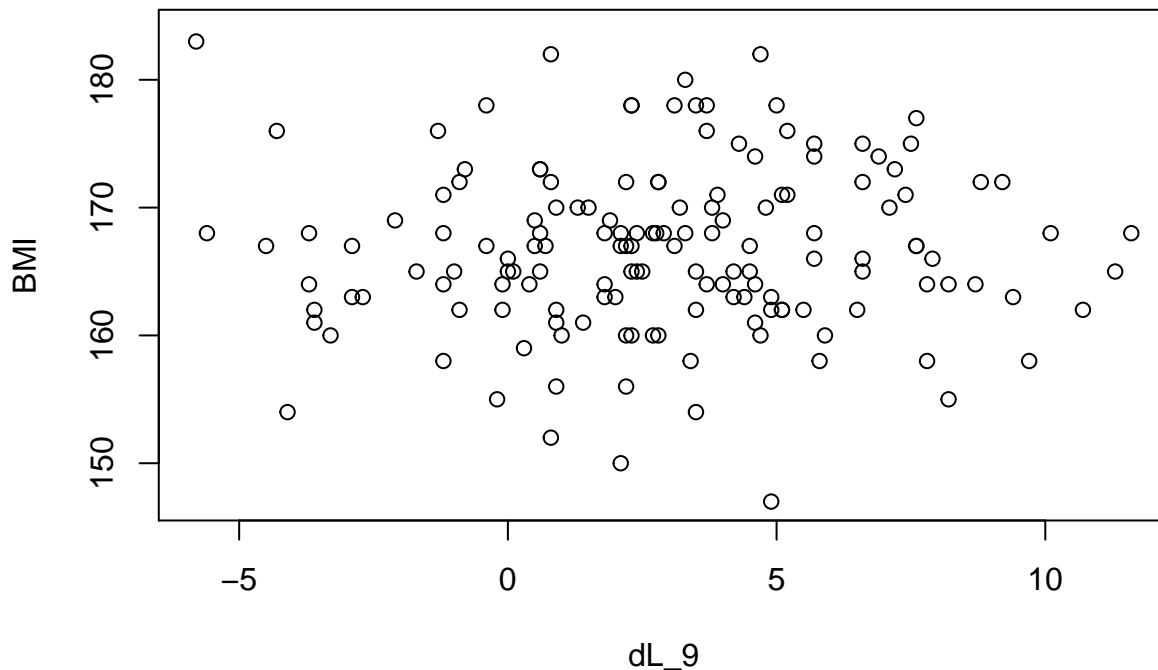


```
cor.test(x,y)
```

```
##
## Pearson's product-moment correlation
##
## data:  x and y
## t = -0.7234, df = 147, p-value = 0.4706
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.2182671  0.1022215
## sample estimates:
##          cor
## -0.05955745
```

9. Az izommegnyúlás mértéke korrelál a testmagassággal.

```
x = dL_9
y = Mag
plot(x,y,xlab="dL_9",ylab="BMI")
```

```
cor.test(x,y)
```

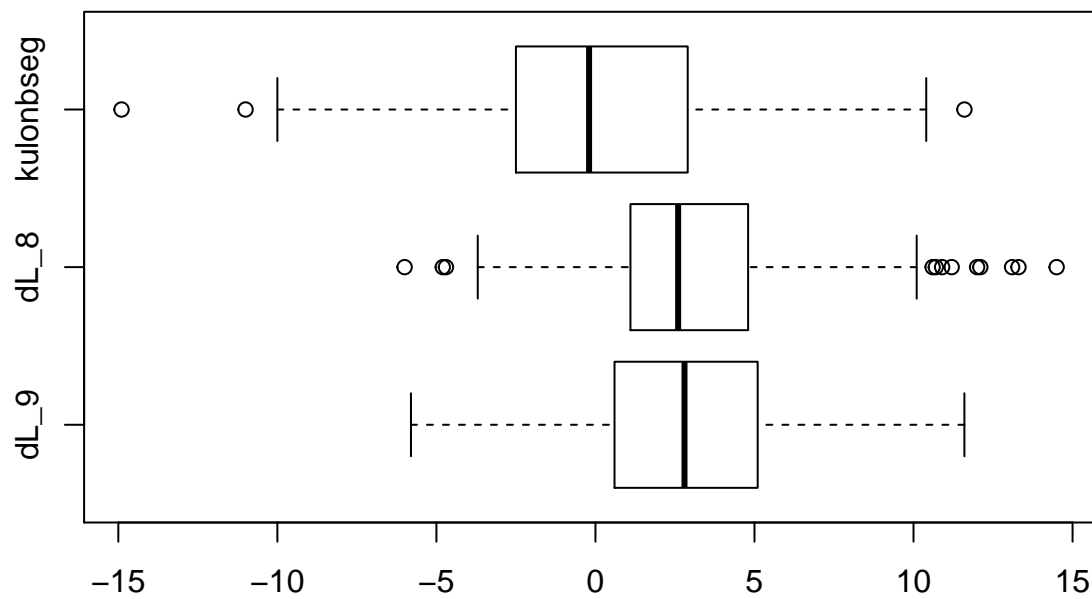
```
##
## Pearson's product-moment correlation
##
## data: x and y
## t = 0.2915, df = 150, p-value = 0.771
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.1359186 0.1823070
## sample estimates:
## cor
## 0.02379702
```

5. A terhességi korrall arányosan növekszig a medencefenék izmainak megnyúlása (mondjuk az első trimeszterbeli értékeket kellene összevetni a szülés előtttel).

TODO

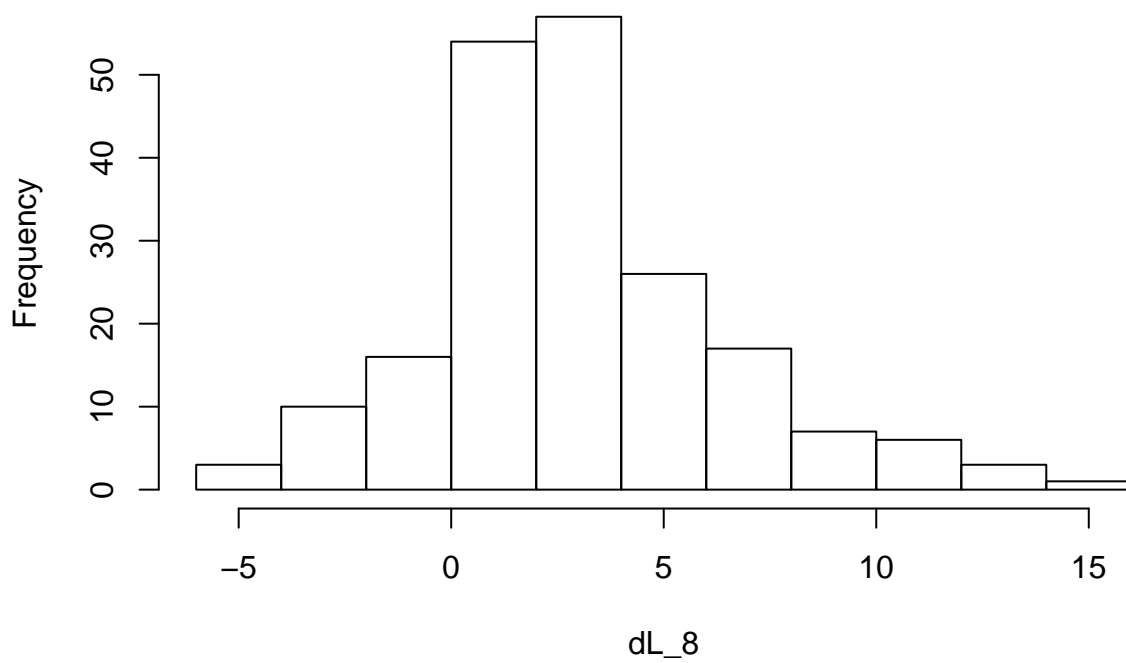
6. A szülés előtti medencefenék (36. hetes UH) megnyúlása nagyobb a szülés utáni 6 hetes kontrollhoz képest.

```
kontroll_6hetes = dL_9
szules_elott = dL_8
kul = szules_elott - kontroll_6hetes
boxplot(kontroll_6hetes,szules_elott,kul,horizontal=TRUE,names=c("dL_9","dL_8","kulonbseg"))
```



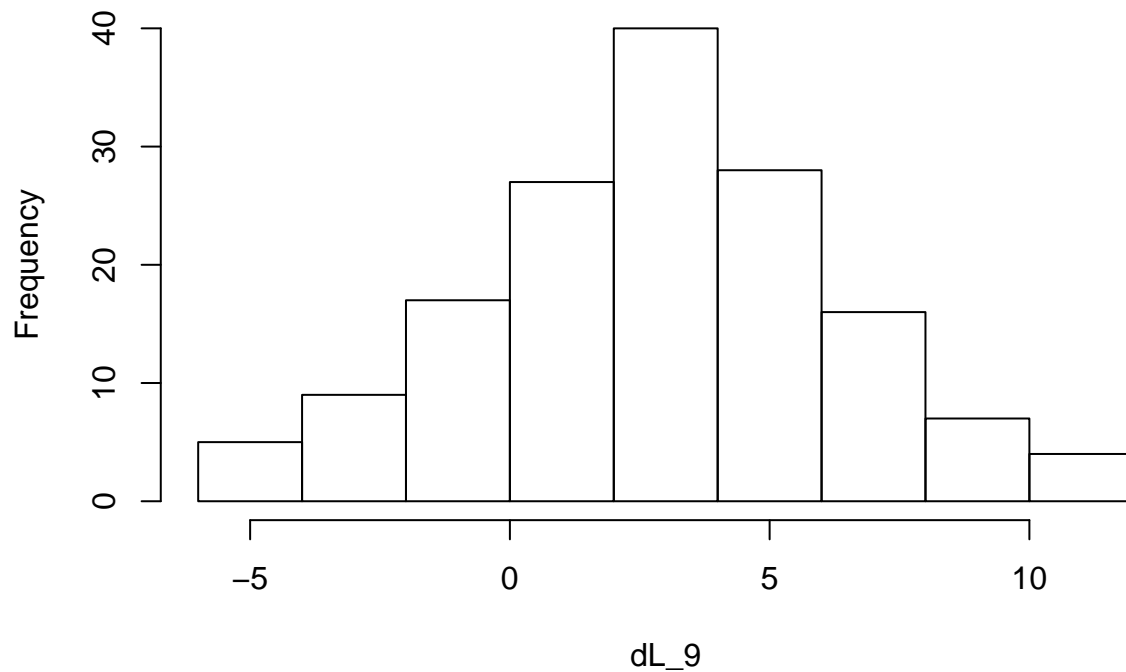
```
hist(dL_8)
```

Histogram of dL_8



```
hist(dL_9)
```

Histogram of dL_9



```
t.test(kontroll_6hetes,szules_elott,alternative="greater",paired=TRUE)
```

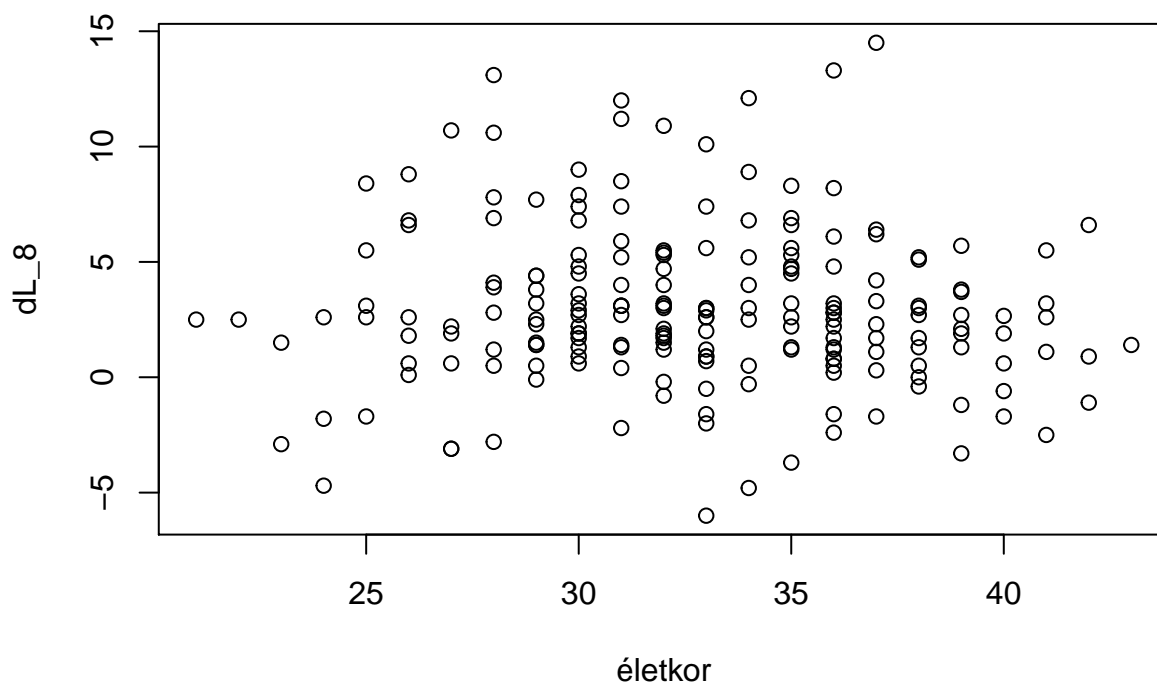
```
##
## Paired t-test
##
## data: kontroll_6hetes and szules_elott
## t = 0.1897, df = 136, p-value = 0.4249
## alternative hypothesis: true difference in means is greater than 0
## 95 percent confidence interval:
## -0.5529987      Inf
## sample estimates:
## mean of the differences
##          0.07153285
```

```
t.test(kontroll_6hetes,szules_elott,paired=TRUE)
```

```
##
## Paired t-test
##
## data: kontroll_6hetes and szules_elott
## t = 0.1897, df = 136, p-value = 0.8498
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.6742089  0.8172746
## sample estimates:
## mean of the differences
##          0.07153285
```

7-8. Fiatalabb várandósoknál kisebb mértékű az izmok megnyúlása, mint az idősebbeknél. Fiatal várandósoknál nagyobb a szülés előtt és a szülés után mért izomnyúlás közötti különbség, mint az idősebb várandósoknál. (jobb a regenerációs hajlam fiatalabb korban)

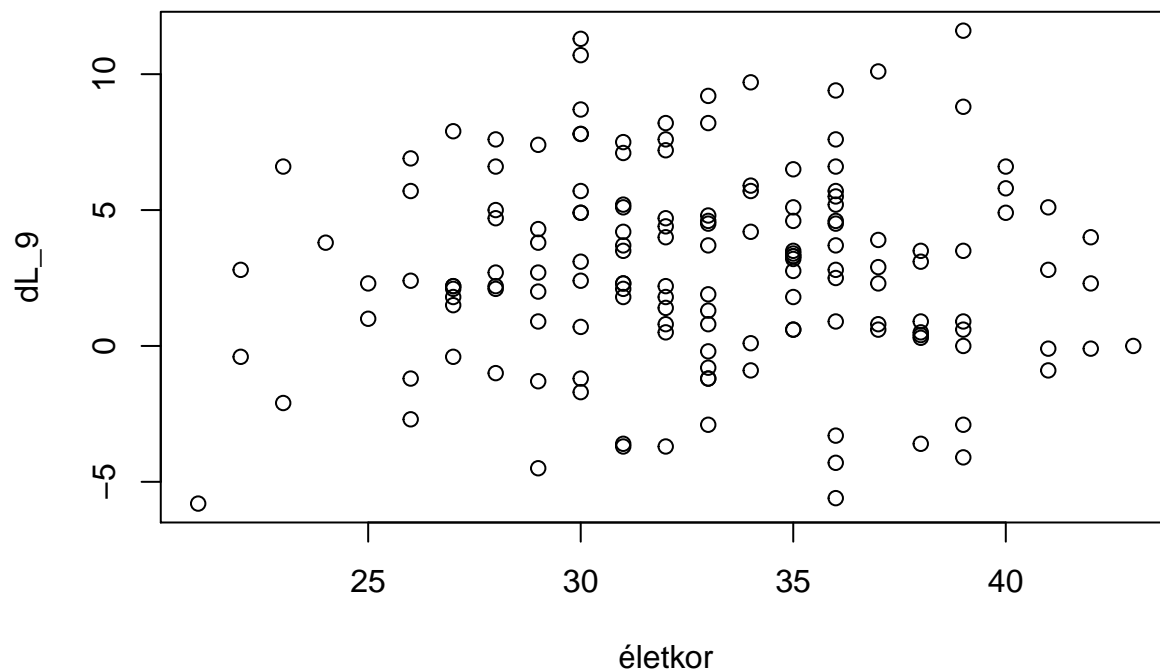
```
x = Ek
y1 = dL_8
y2 = dL_9
yd = y2-y1
plot(x,y1,xlab="életkor",ylab="dL_8")
```



```
cor.test(x,y1)
```

```
##
## Pearson's product-moment correlation
##
## data: x and y1
## t = -0.9001, df = 198, p-value = 0.3692
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.2007966 0.0755764
## sample estimates:
## cor
## -0.06383395
```

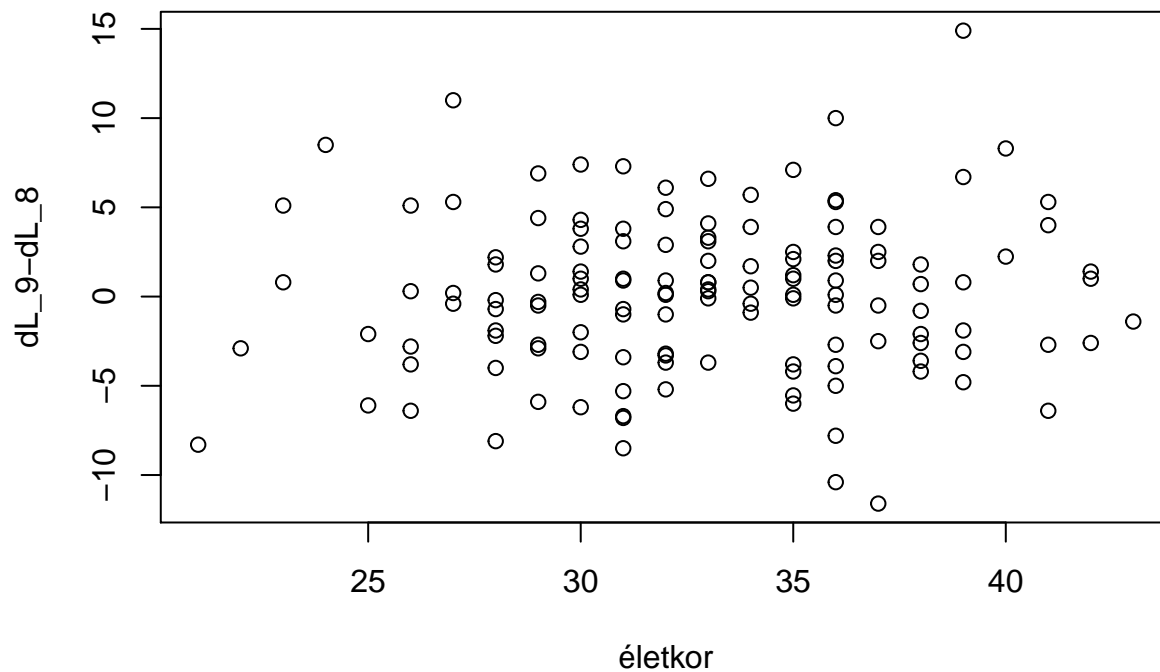
```
plot(x,y2,xlab="életkor",ylab="dL_9")
```



```
cor.test(x,y2)
```

```
##
## Pearson's product-moment correlation
##
## data:  x and y2
## t = 0.101, df = 151, p-value = 0.9197
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.1506567  0.1666787
## sample estimates:
##          cor
## 0.008217919
```

```
plot(x,yd,xlab="életkor",ylab="dL_9-dL_8")
```

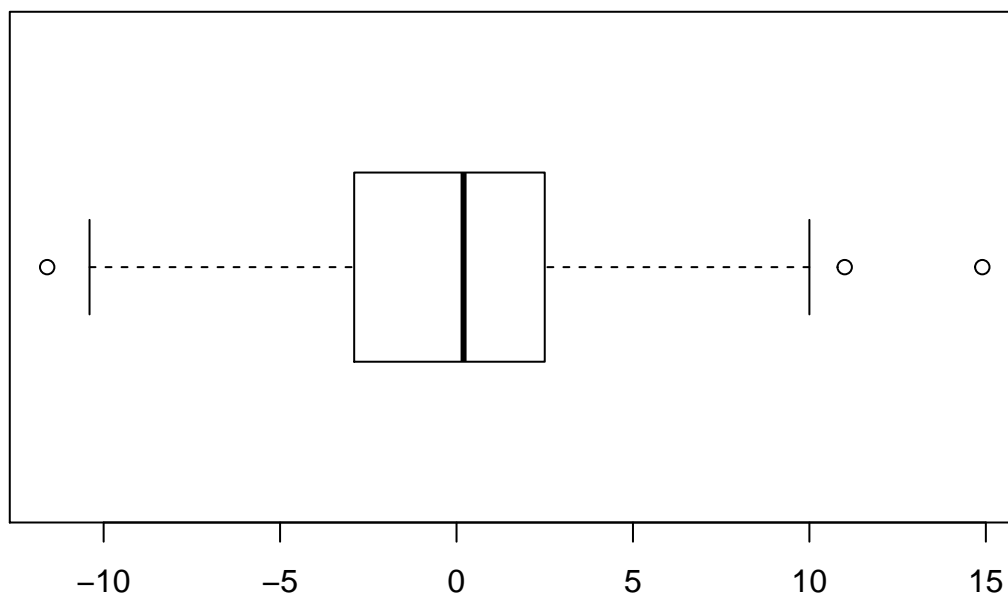


```
cor.test(x,yd)
```

```
##
## Pearson's product-moment correlation
##
## data:  x and yd
## t = 0.5973, df = 135, p-value = 0.5513
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.1173896  0.2171821
## sample estimates:
##          cor
## 0.05133657
```

10. Szülés módja alapján a dL_9-dL_8 értékek nőnek hüvelyi szülés esetén

```
csoport = Sz_mod
vált = dL_9-dL_8
boxplot(vált,horizontal=T)
```



```
summary(valt)
```

```
##      Min.   1st Qu.   Median     Mean   3rd Qu.    Max.     NA's
## -11.60000 -2.90000   0.20000   0.07153   2.50000  14.90000     81
```

```
summary(valt[csoport=="PVN"])
```

```
##      Min. 1st Qu.  Median     Mean 3rd Qu.    Max.     NA's
##  -8.500  -0.600   1.000   1.412   3.950  11.000     41
```

```
summary(valt[csoport=="SC"])
```

```
##      Min. 1st Qu.  Median     Mean 3rd Qu.    Max.     NA's
## -11.600  -3.550  -1.200  -1.211   1.300   14.900     37
```

```
sd(valt,na.rm=TRUE)
```

```
## [1] 4.413864
```

```
huvelyi = valt[csoport=="PVN"]
```

```
csaszar = valt[csoport=="SC"]
```

```
t.test(huvelyi,csaszar,alternative="greater")
```

```
##
```

```
## Welch Two Sample t-test
```

```
##
```

```
## data: huvelyi and csaszar
```

```
## t = 3.6321, df = 134.968, p-value = 0.0001991
```

```
## alternative hypothesis: true difference in means is greater than 0
```

```
## 95 percent confidence interval:
```

```
##  1.427133      Inf
```

```
## sample estimates:
```

```
## mean of x mean of y
```

```
##  1.411940 -1.211429
```

```
t.test(huvelyi,csaszar)
```

```
##
```

```
## Welch Two Sample t-test
```

```
##
## data: huvelyi and csaszar
## t = 3.6321, df = 134.968, p-value = 0.0003982
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  1.194942 4.051795
## sample estimates:
## mean of x mean of y
##  1.411940 -1.211429
boxplot(huvelyi,csaszar,horizontal=T,names=c("huvelyi","csaszar"),xlab="dL9-dL8")
```

