Frustra fit per plura ..

.. quod fieri potest per pauciora

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Contenuti

Articolo - guida

Respiration. 2012;84(5):369-76. doi: 10.1159/000334403. Epub 2011 Dec 28.

Early short-term application of high-frequency percussive ventilation improves gas exchange in hypoxemic patients.

Lucangelo U, Zin WA, Fontanesi L, Antonaglia V, Peratoner A, Ferluga M, Marras E, Borelli M, Ciccolini M, Berlot G.

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Abstract

BACKGROUND: Hypoxemia in acute lung injury/acute respiratory distress syndrome (ALI/ARDS) patients represents a common finding in the intensive care unit (ICU) and frequently does not respond to standard ventilatory techniques.

OBJECTIVE: To study whether the early short-term application of high-frequency percussive ventilation (HFPV) can improve gas exchange in hypoxemic patients with ALI/ARDS or many other conditions in comparison to conventional ventilation (CV) using the same mean airway pressure (P(aw)), representing the main determinant of oxygenation and hemodynamics, irrespective of the mode of ventilation.

METHODS: Thirty-five patients not responding to CV were studied. During the first 12 h after admission to the ICU the patients underwent CV. Thereafter HFPV was applied for 12 h with P(aw) kept constant. They were then returned to CV. Gas exchange was measured at: 12 h after admission, every 4 h during the HFPV trial, 1 h after the end of HFPV, and 12 h after HFPV. Thirty-five matched patients ventilated with CV served as the control group (CTRL).

RESULTS: PaO(2)/FiO(2) and the arterial alveolar ratio (a/A PO(2)) increased during HFPV treatment and a PaO(2)/FiO(2) steady state was reached during the last 12 h of CV, whereas both did not change in CTRL. PaCO(2) decreased during the first 4 h of HFPV, but thereafter it remained unaltered; PaCO(2) did not vary in CTRL. Respiratory system compliance increased after HFPV.

CONCLUSIONS: HFPV improved gas exchange in patients who did not respond to conventional treatment. This improvement remained unaltered until 12 h after the end of HFPV.

Differenze tra due gruppi: grafico

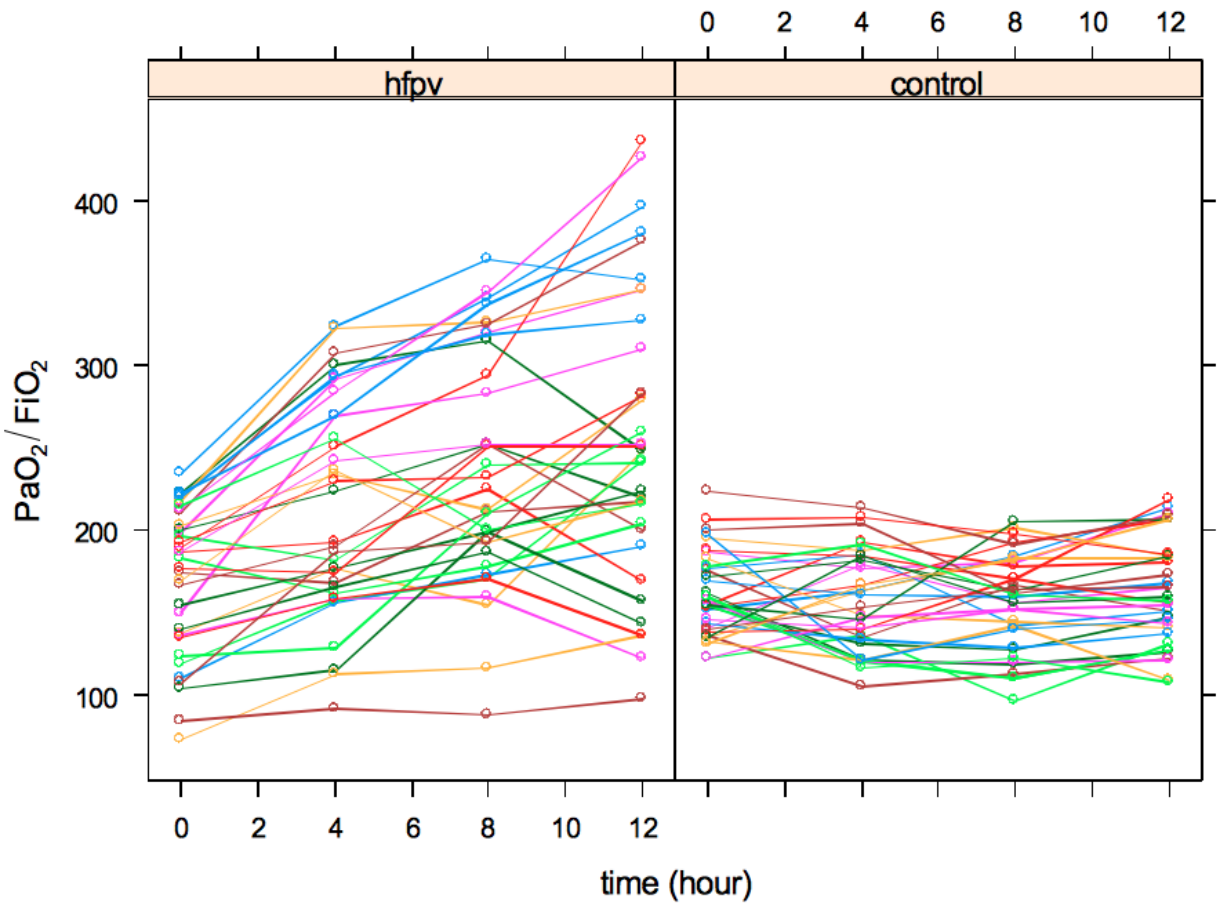


Figure: HFPV versus CV in ALI/ARDS.

Differenze tra due gruppi: variazioni percentuali

Table: HFPV

80	74	10	131	82	106	25	74	107	11
-10	38	22	20	50	-11	115	46	59	11
78	70	100	1	42	87	110	16	49	34
2	1	28	0	166					

Table: CV

41	12	-23	17	35	7	-14	-15	18	-4
35	-6	-18	-11	0	-24	7	-18	-24	-21
-14	-5	27	33	57	-19	-34	-7	-27	-3
19	-10	58	-12	18					

La media e la deviazione standard

Il test t di Student

```
> t.test(VARIAZIONE ~ GROUP)

   Welch Two Sample t-test

data:  VARIAZIONE by GROUP
t = -5.7994, df = 52.402, p-value = 3.897e-07
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -67.25888 -32.68398
sample estimates:
  mean in group CV mean in group HFPV
         2.142857          52.114286
```

Il test di Fisher e Snedecor

```
> var.test(VARIAZIONE ~ GROUP)

   F test to compare two variances

data:  VARIAZIONE by GROUP
F = 0.294, num df = 34, denom df = 34, p-value = 0.0005785
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.1484017 0.5824520
sample estimates:
ratio of variances
         0.2940015
```

Normalità

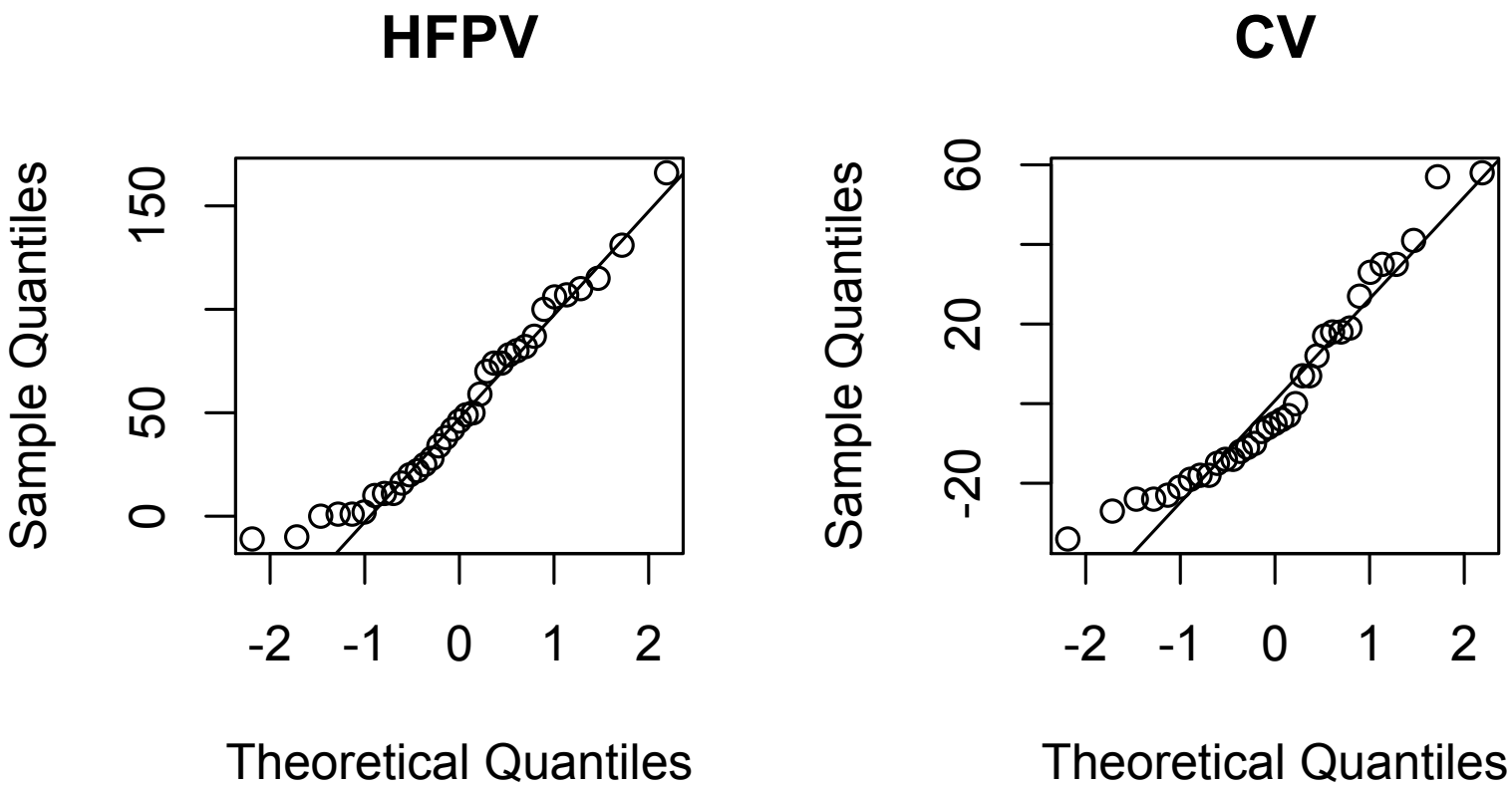


Figure: non normalità dei dati.

Il test di Wilcoxon (Mann e Whitney)

```
> wilcox.test(VARIAZIONE ~ GROUP)

   Wilcoxon rank sum test with continuity correction

data:  VARIAZIONE by GROUP
W = 188.5, p-value = 6.525e-07
alternative hypothesis: true location shift is not equal to 0

Warning message:
In wilcox.test.default(x = c(41L, 12L, -23L, 17L, 35L, 7L, -14L,  :
  impossibile calcolare p-value esatto in presenza di ties
```

Riassumendo

Differenze tra due gruppi

si deve verificare nell'ordine:

- la normalità dei dati
- la differenza di dispersione dei dati
- la differenza di centralità dei dati

il software che usiamo


Università degli Studi di Trieste

Dipartimento di Matematica e Geoscienze

QUADERNI DIDATTICI

Massimo Borelli

R Commander:
Quattro domande di statistica (e quattro risposte)

Quaderno n.58

Gennaio 2012

Edizione fuori commercio

SONO STATI ADEMPIUTI GLI OBBLIGHI DI LEGGE
D.P.R. 03/05/06 nr. 252 (G.U. nr. 191 del 18/06/06)

Dipartimento di Matematica e Geoscienze
Università degli Studi di Trieste

Difficoltà matematica

Che fare?

$$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1^2}{n_1} - \frac{s_2^2}{n_2}}}$$

Articolo - guida

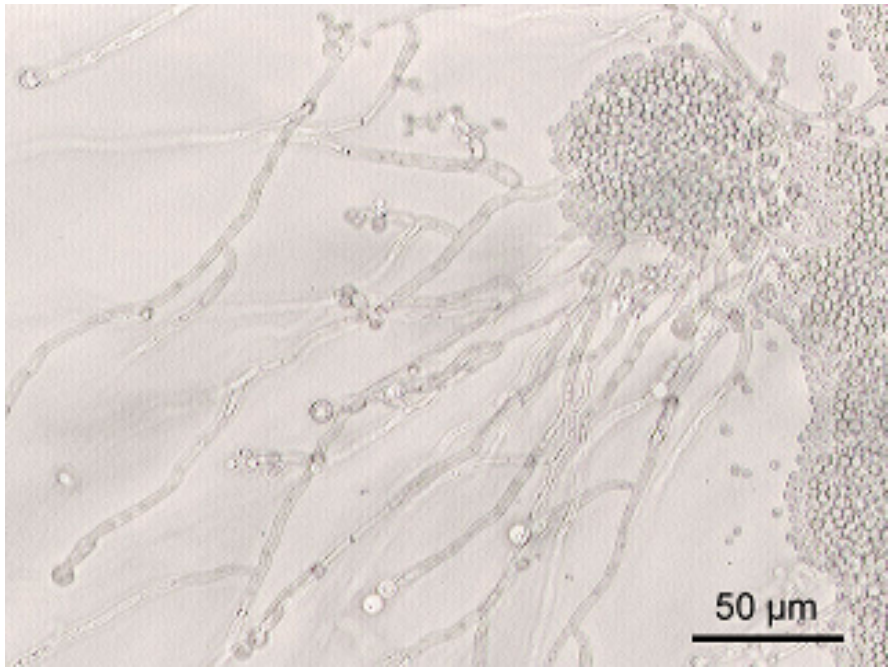


Figure: *Candida albicans*.

Età nei tre reparti

Table: Age

Reparti	Min.	1st Qu.	Median	Mean	sd	3rd Qu.	Max.
MIC	14.00	70.00	81.00	75.92	15.30	86.00	98.00

Table: Age by reparto

Reparto	Min.	1st Qu.	Median	Mean	sd	3rd Qu.	Max.
C (16%)	48.00	61.00	70.00	70.17	13.10	80.50	89.00
I (17%)	31.00	66.75	80.00	73.00	17.63	84.25	91.00
M (67%)	14.00	75.00	82.00	77.99	14.86	87.00	98.00

Il grafico 'spiega' l'Anova

Differenze tra più gruppi

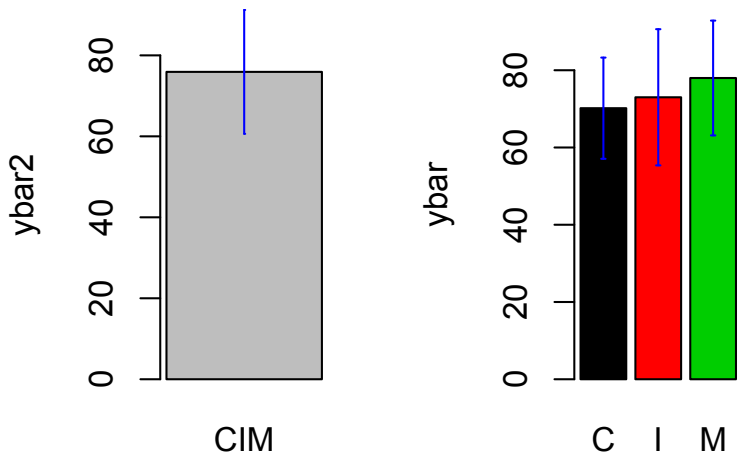
```
Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)           70.174      3.147  22.300   <2e-16 ***
RepartoappartenenzaI   2.826      4.404   0.642    0.522
RepartoappartenenzaM   7.816      3.497   2.235    0.027 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 15.09 on 142 degrees of freedom
Multiple R-squared: 0.04104, Adjusted R-squared: 0.02753
F-statistic: 3.038 on 2 and 142 DF,  p-value: 0.05105
```

Differenze tra più gruppi: *multiple comparison*

età media nei reparti:

- C vs. I
- C vs. M
- I vs. M



Differenze tra più gruppi: *multiple comparison*

$$(1 - \frac{5}{100}) \cdot (1 - \frac{5}{100}) \cdot (1 - \frac{5}{100}) =$$

$$= (1 - \frac{5}{100})^3 = 0.86$$

Livello $\alpha = 5\%$

Sussiste il **14%** di probabilità di compiere un *errore di primo tipo*, i.e. affermare arbitrariamente che vi è un effetto (che potrebbe esserci, o no, ma tale decisione non può venir tratta dai dati in esame).

Differenze tra più gruppi: *multiple comparison*

The European Agency for the Evaluation of Medicinal Products
Evaluation of Medicines for Human Use

London, 19 September 2002
CPMP/EWP/908/99

Points to consider in Clinical Trials

.. multiplicity can have a substantial influence on the rate of false positive conclusions (..) whenever there is an opportunity to choose the most favourable result from two or more analyses.

Differenze tra più gruppi: *multiple comparison*

Table: Espressione genica in dieci soggetti

	T1	T2	T3	T4	T5	C1	C2	C3	C4	C5
g1	-0.50	-0.43	-0.10	-0.26	0.89	-0.33	-0.77	-0.40	-0.24	-1.23
g2	0.13	0.76	1.40	-0.06	-0.04	1.363	0.424	-2.13	0.059	0.589
g3	-0.07	0.26	-1.77	-0.37	-1.34	-0.46	-0.58	0.156	-0.17	0.124
g4	0.88	0.77	0.62	2.581	-1.93	0.842	0.415	0.660	0.794	-0.52
g5	0.11	-0.81	-0.52	0.129	0.709	-1.45	-1.54	-0.98	0.006	0.620
g6	0.31	-0.43	1.32	-0.71	-0.15	-0.40	-0.51	-1.11	-0.62	0.708
g7	-0.58	-0.72	-0.36	0.637	0.216	-0.77	-0.27	-0.43	-0.25	-0.09
g8	0.71	0.23	1.32	0.201	0.82	-0.36	1.007	-0.51	-0.69	-0.29
g9	-0.82	-1.15	0.04	-0.06	1.727	1.240	-0.46	0.418	0.202	-1.08
g10	-0.35	0.24	-1.87	-0.09	-0.10	-0.10	0.297	0.134	0.846	-0.62
g11	0.08	-0.09	-0.44	0.44	-0.55	0.172	-0.41	1.034	0.632	-0.23
g12	0.09	1.75	-1.73	-1.06	1.43	0.254	-0.85	1.653	0.201	-0.25
g13	-0.20	-0.13	0.18	-1.16	-0.89	-0.61	0.689	-0.01	-0.09	0.953
g14	0.74	-0.11	1.89	1.65	-1.15	-1.42	-0.46	-0.02	0.289	-0.26
g15	0.12	-0.69	-2.27	-2.06	-0.53	-0.33	1.348	0.250	-0.05	1.895
g16	-0.02	-0.22	0.98	0.01	2.45	0.128	0.443	-0.33	-2.04	-0.42
g17	-0.38	0.18	-1.39	-1.08	-0.83	1.018	-0.15	-0.11	0.358	1.575
g18	0.51	0.42	1.82	0.27	0.41	-0.25	0.455	-0.09	-0.37	0.161
g19	-0.91	1.06	1.38	1.01	-1.17	-0.30	-0.04	0.264	1.268	-1.08
g20	2.31	0.97	-0.83	-2.07	-1.17	1.615	0.456	0.138	2.168	0.576

Differenze tra più gruppi: *multiple comparison*

Table: Espressione genica in dieci soggetti

	T1	T2	T3	T4	T5	C1	C2	C3	C4	C5	p
g8	0.71	0.23	1.32	0.20	0.82	-0.36	1.007	-0.51	-0.69	-0.29	**0.021**
g15	0.12	-0.69	-2.27	-2.06	-0.53	-0.33	1.35	0.25	-0.05	1.89	**0.027**
g17	-0.38	0.18	-1.39	-1.08	-0.83	1.02	-0.15	-0.11	0.36	1.58	**0.053**
g18	0.51	0.42	1.82	0.27	0.41	-0.25	0.45	-0.09	-0.37	0.16	**0.059**

Riassumendo

Differenze tra più gruppi

- normalità
- differenza di dispersione
  - Bartlett
  - Levene
- 'correggere' per la molteplicità
  - Bonferroni?
  - Tukey
  - Dunnett (se gold standard)
  - `glht`

Articolo-guida

Cortex. 2011 Dec 16. [Epub ahead of print]

Motor excitability evaluation in developmental stuttering: A transcranial magnetic stimulation study.

Busan P, D'Ausilio A, Borelli M, Monti F, Pelamatti G, Pizzolato G, Fadiga L.

DSBTA, Section of Human Physiology, University of Ferrara, Ferrara, Italy; Department of Medical, Surgical and Healthy Sciences, University of Trieste, Trieste, Italy.

Abstract

INTRODUCTION: Developmental stuttering (DS) is viewed as a motor speech-specific disorder, although several lines of research suggest that DS is a symptom of a broader motor disorder. We investigated corticospinal excitability in adult DS and normal speakers.

METHODS: Transcranial magnetic stimulation (TMS) was administered over left/right hand representation of the motor cortex while recording motor evoked potentials (MEPs) from the contralateral first dorsal interosseous (FDI) muscle. Resting, active motor thresholds, silent period threshold and duration were measured. A stimulus-response curve at resting was also obtained to evaluate MEP amplitudes.

RESULTS: Lower corticospinal responses in the left hemisphere of DS were found, as indicated by a reduction of peak-to-peak MEP amplitudes compared to normal speakers.

CONCLUSIONS: This provides further evidence that DS may be a general motor deficit that also involves motor non-speech-related structures. Moreover, our results confirm that DS may be related to left hemisphere hypoactivation and/or lower left hemisphere dominance. The present data and protocol may be useful for diagnosis of subtypes of DS that may benefit from pharmacological treatment by targeting the general level of cortical excitability.

Come testare la correlazione?

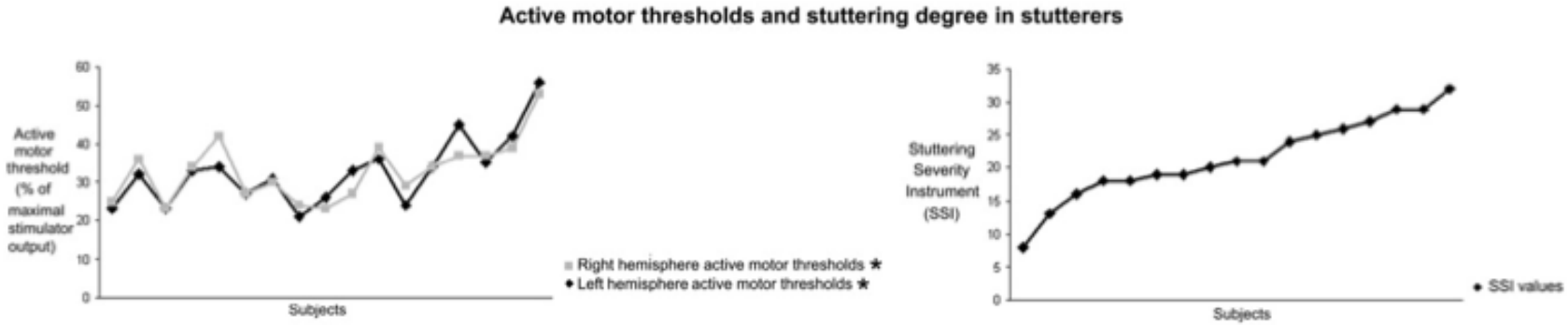
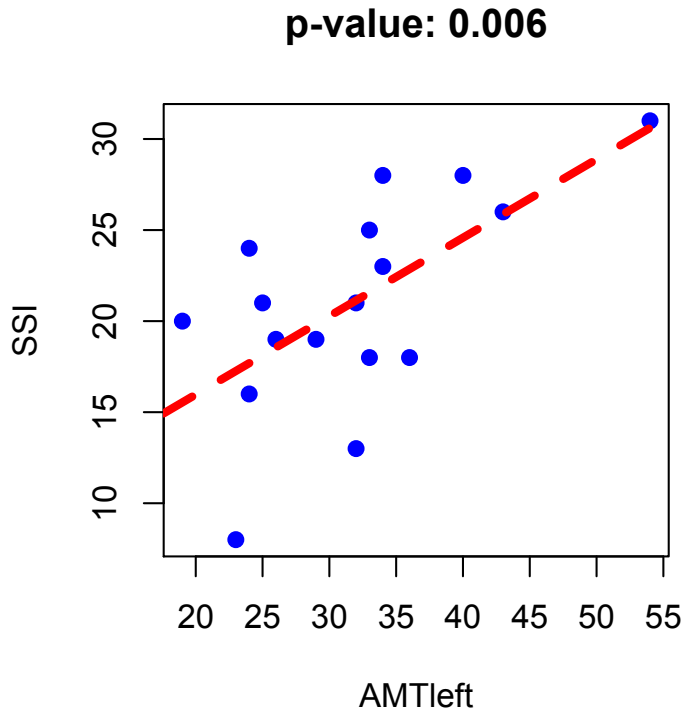


Fig. 2 – Representation of the positive relations between AMTs and stuttering degree. Significant positive relations are indicated by an asterisk. Stuttering subjects ($n = 17$) are reported following an increase in the degree of stuttering on the x-axis.

La retta di regressione



Attenzione a non confondere:

- correlazione 0.63
- significatività 0.006

Retta di regressione: summary

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   7.3585     4.4523   1.653  0.11916
AMTleft       0.4305     0.1354   3.180  0.00622 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 4.624 on 15 degrees of freedom
Multiple R-squared: 0.4026,  Adjusted R-squared: 0.3628
F-statistic: 10.11 on 1 and 15 DF,  p-value: 0.006217
```

Retta di regressione

```
> summary(pierpaoloMC)

    Simultaneous Tests for General Linear Hypotheses

Fit: lm(formula = SSI ~ AMTleft)

Linear Hypotheses:
       Estimate Std. Error t value Pr(>|t|)
1 == 0   7.3585     4.4523   1.653  0.14212
2 == 0   0.4305     0.1354   3.180  0.00789 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Adjusted p values reported -- single-step method)
```

Conclusioni: Frustra fit per plura?

- differenze tra due gruppi
  - test t di Student
- differenze tra più gruppi
  - Anova
- correlazione
  - retta di regressione

Conclusioni: il modello lineare

- differenze tra due gruppi
  - + test t di Student
- differenze tra più gruppi
  - + Anova
- correlazione
  - + retta di regressione

```
lm(variazione ~ gruppo)
```

```
lm(eta ~ reparto)
```

```
lm(SSI ~ AMTleft)
```

Modelli lineari generalizzati

Arch Gynecol Obstet. 2012 Nov;286(5):1135-9. doi: 10.1007/s00404-012-2444-x. Epub 2012 Jun 30.

The effects of uterine fundal pressure (Kristeller maneuver) on pelvic floor function after vaginal delivery.

Sartore A, De Seta F, Maso G, Ricci G, Alberico S, Borelli M, Guaschino S.

Department of Obstetrics and Gynecology, IRCCS Burlo Garofolo, University of Trieste, Trieste, Italy. sartore@burlo.trieste.it

Abstract

PURPOSE: To evaluate the role of uterine fundal pressure during the second stage of labor (Kristeller maneuver) on pelvic floor dysfunction (urinary and anal incontinence, genital prolapse, pelvic floor strength).

METHODS: 522 primiparous women, enrolled 3 months after vaginal delivery, were divided in two groups: group A (297 women) identifies the women who received Kristeller maneuvers with different indications (e.g. fetal distress, failure to progress, mother exhaustion), group B (225 women) the women without maneuver. Participants were questioned about urogynecological symptoms and examined by Q-tip test, digital test, vaginal perineometry and uroflowmetric stop test score.

RESULTS: Mediolateral episiotomies, dyspareunia and perineal pain were significantly higher in Kristeller group, whereas urinary and anal incontinence, genital prolapse and pelvic floor strength were not significantly different between the groups.

CONCLUSIONS: Kristeller maneuver does not modify puerperal pelvic floor function but increases the rate of episiotomies.

Modelli lineari generalizzati

Table: `lm`

gruppo	variazione
⋮	⋮
HFPV	28
HFPV	70
HFPV	166
CV	1
CV	12
⋮	⋮

Table: `glm`

kristeller	pesoneonatale
⋮	⋮
si	4390
si	4170
si	3100
no	3970
no	4080
⋮	⋮

The end