TECHNICAL ADVANCE ARTICLES

Specifications of the clinical stabilometry platform 'ADAP_NORMES13'

Pierre-Marie Gagey[1]

ABSTRACT

Latin posturologists unanimously recognize and accept that the normalization of stabilometry can only be based on decisions often arbitrary . These specifications of the standard stabilometry platform, ADAP-Normes2013, represent the first series of those decisions, admittedly arbitrary but made after a discussion with the French and Russian platform manufacturers, in Paris on 13 December 2007.

Keywords: Stabilometry; Force platform; Normalisation; Specifications.

METROLOGY

The figure 1 shows the normal operating range with minimum and maximum values.

The figure 2 shows the storage temperature range.

Average time of good uptime

The manufacturer will specify the time interval between periodic inspections.

Validation tests Procedures

The Parre's test procedure[1] may be used to validate the compliance of the platform with the specifications.

STABILOMETRIC SIGNAL

Center of gravity

The calculation of the position of the center of gravity **must comply with the sources, provided free** by the ADAP.[2] Not because this calculation would be the best, but because we need to work on the same values.

This calculation **should use the height** of the subject and the form factor: **0.659**, not because it would be the best, but because we need to work on the same values.[3]

Signal analysis

Manufacturers may provide all stabilometric parameters they want. But ADAP has defined some parameters described in a data basis; the software provided by manufacturers must produce exactly the same values of these parameters as those given in the data basis. (The data basis will be published later).

Transfer of the stabilometric signal

The coordinates of the center of pressure of each recording **must be available for anyone**. At the end of the file, the first five tags will give these indications, in this order and these units:

1) Height (cm),
2) Weight (Kg),
3) Shoe size (French),
4) Sex,
5) Age (Years)

NON MANDATORY APPENDIX

Weight of the skirt of the platform

The error due to the weight of the skirt of the platform is to be corrected, simply by multiplying the signal by the coefficient:

$$(1 + Pj / Ps)$$

where Pj is the weight of the skirt and Ps is the subject's weight.

Corresponding author: Pierre-Marie Gagey. Paris, France. E-mail: pmgagey@club-internet.fr

[1] Institut de Posturologie Paris, Paris, France.

Height of the platform

It could be a good idea reducing the distance between the plane of the gauges and the superior plane of the platform.[4]

The figure 3 shows the proposal of a standard connection platform/PC.

CERTIFICATE OF CONFORMITY

Directive 93/42 / EEC and its Annexes of the Council of Europe of 14 June 1993[5] provides that: "The EC declaration of conformity is the procedure whereby the manufacturer ensures and declares that the products concerned meet the provisions of the Directive … "

This obligation and its consequences are therefore imposed to the builders of stabilometric platforms conform to the specifications ADAP2013 (considered as Medical Devices, Class 1 m, with measuring function), particularly in its Annexes VI and X (point 3). It belongs to them taking all technical, industrial, organizational and contractual decisions needed to certify the proper compliance of their platforms to these specifications.

Parameter	Min	Max	Unit	Conditions
Weight range	20	150	Kg	
Measurement range in X and Y	-100	+100	mm	
Limits of permissible error	+/-0.5		mm	+/-100 mm in X and Y
Resolution	0.1		mm	
Noise		0.25	mm	
X &Y Position signal update time	20		ms	
Ambient temperature change rate	-1	+1	°C/min	
Operating temperature range	18	30	°C	

Figure 1. Normal operating range.

Parameter	Min	Max	Unit	Conditions
Storage temperature range	-10	50	°C	

Figure 2. Absolute Maximum Ratings.

Frame Header(*)	Separator	X Position in mm						Separator	Y Position in mm						Separator	Error Code (..)	end of frame	
Hexa	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii	Ascii
8A	;	+	1	0	0	.	0	;	-	1	0	0	.	0	;	0	\n	\r

Figure 3. Proposal of a standard connection platform/PC.

(*) "8A" 2bytes header: "10001010" in binary.

(**) « 0 » for a valid measurement.

UART communication using USB2.0 cable & COM port compatible.

- Baud Rate: 9600 bps minimum … 115.200 bps maximum.
- Data: 8 bits.
- Stop Bit: 1bit.
- Parity: None.

COMPETING INTERESTS

The author(s) declare that they have no competing interests.

REFERENCES

1. Parre F. Qualification d'une plate-forme de stabilométrie. 2005 [cited 2015]; Rapport de stage d'un DESS de Physique, Université de Toulouse (48 pages)]. Available from: http://ada-posturologie.fr/Parre.pdf.

2. Gagey B. Programmation du calcul de la solution numérique de l'équation de WINTER. 2011; Available from: http://ada-posturologie.fr/Programme_Bernard.pdf<.

3. Gagey B. Etude sur le coefficient de l'équation de Winter. 2013 [cited 2013 06/10//2013]; Available from: http://ada-posturologie.fr/Winter_coefficient_k2.pdf.

4. Kodde L, Nieuwenhuizen J, Massen C. The influence of platlorm geometry on stabilograms. Biomedizinische Technik. 1978;23(5/6):130-113 l.

5. Lexurisery. Directive 93/42 EEC. 1993 [cited 2015]; Available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1993L004.