

## Study of the valuation system for movement condition: R-L

Jeong-lae Kim<sup>\*</sup>, Kyu-dong Kim<sup>\*\*</sup>

<sup>\*</sup>Department of Biomedical Engineering Eulji University, Seoul, Korea  
jlkim@eulji.ac.kr

<sup>\*\*</sup>Department of Medical IT and Marketing Science Eulji University, Seoul, Korea  
kdkim@eulji.ac.kr

### Abstract

*This study was compared the variation system of body posture condition for stability by the posture. We used a model of bio parameter on the basis of the move state in the standing posture. We compared the sway movement derived from average of the physical sensing condition. Vision condition of variation average ( $Vi-\sigma_{AVG-AVG}$ ) was verified slightly greater at  $13.746 \pm 4.05$  unit. Vestibular condition of variation average ( $Ve-\sigma_{AVG-AVG}$ ) was verified slightly larger at  $7.829 \pm 1.071$  unit. Somatosensory condition of variation average ( $So-\sigma_{AVG-AVG}$ ) was verified slightly smaller at  $2.592 \pm 0.538$  unit. CNS condition of variation average ( $C-\sigma_{AVG-AVG}$ ) was verified slightly larger at  $0.46 \pm 0.105$  unit. The valuation system will be to deduce the model of body management with falling and stroke and all that sort of things. There will be to infer a data algorithm and the evaluation of processing system.*

**Keywords:** variation system, body posture condition, model of body, data algorithm system

### 1. Introduction

Human healthcare was concerned in the posture movement and was associated with a concerned considerable activity, individual protection and included stability rate [1]. Postural activity was used a general perturbations by the defensive signal, that postural valuation system inquired the movements of slow and oscillation [2]. Posture variation was taken a theoretical feature of the controlled plate for measurement which may be confirmed a variation in body mass and mass distribution [3].

### 2. Related research of valuation system for signal

Variation system was provided the home management that user access presented to internet through Local Area Network (LAN) on the clinical center [4]. Posture of activity provided a walking and running that the combined user requires of right and left inputs. Body condition was exhibited of sensing pattern from the changed pattern that they are measured an examination [5].

### 3. Proposed Method of valuation system for signal

#### A. System of valuation system signal

This system (Figure 1) was showed the architecture by the proposed system for the valuation system. Their

acquired signal was composed of data gateway and serve system. The system was designed at valuation system that was to measure the body moment by moving forms was used for achieving a signal data. The system keeps normally when the body condition can deal with it to generate a sway case by the fixed up axial [6-7].

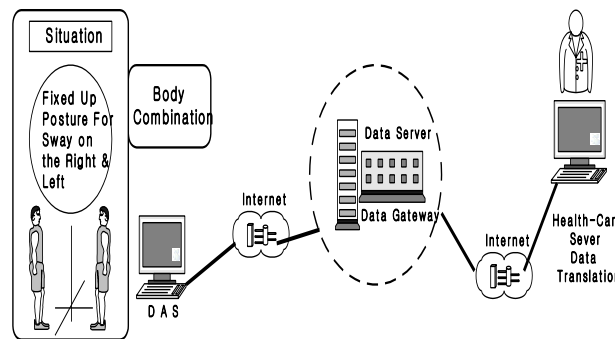


Figure 1. Proposed of valuation system for physical signal on the posture.

### B. Algorithm of valuation system signal

In Figure 2 was composed aspects to be specified in the body management system by body sway a signal process. Signal process included the definition of the inputs was to be apply the HL\_HR signal in response to displacement from a particular received outputs of the HL\_HR value.

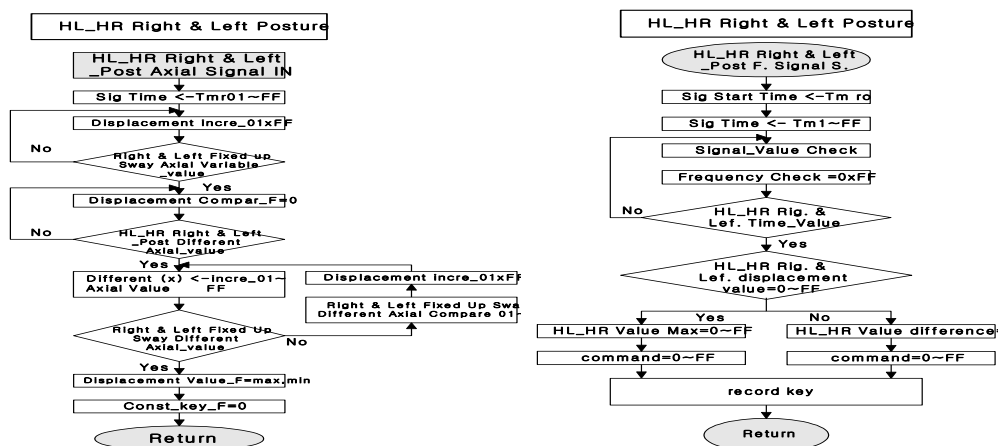


Figure 2. Algorithm of valuation system on the posture physical signal

Several The specification of algorithms was called a communicating of HL\_HR for movement modules. We addressed the item of a body signal described by the several time model. The following is a list of issues related to distribute testing of communications algorithm: 1) There was to start the frequency of right and left signal for the HL\_HR by the body movement. 2) There was to translate the time variable of right and left time point. 3) There was the posture axial sway displacement of right and left time for the HL\_HR by the reference. Right and left frequency signal translated from HL\_HR\_time\_value to HL\_HR displacement was "Yes" as an output action, and a value "Max" condition, while translated from HL\_HR displacement to HL\_HR\_Val\_difference can execute on input "No" at any time, and reset to zero command value. A distinction between posture movement signal case and HL\_HR displacement case was all made. The commonly aspect was the form of the connection through which the frequency case interacts with the HL\_HR value.

The right and left time of the axial sway displacement by the reference translated from right\_left Axial variable value to HL\_HR\_Diff-Axial variable value has “Yes” as an flow action, and translated from HL\_HR\_Diff-Axial variable value to HL\_HR\_T\_different Axial value has “Yes” as an flow action, and a value “Displacement” condition, while translated from HL\_HR\_T\_different Axial value to T\_different Axial\_Com executed on input “No” at any time, and reconstruct to zero Const-key value. A sharp distinction between right\_left signal case and axial displacement case was all made. The commonly aspect was the form of the connection through which the axial displacement case interacts with the HL\_HR value of sway.

The right and left time variable translated from HL\_HR\_Reference\_value to right\_left\_T variable value has “Yes” as an output condition, and a value “Max-Min” condition, while translated from right\_left \_T variable value to right\_left\_T-variable difference can be executed on input “No” at any time, and reset to zero command value. A clear distinction between posture movement time signal case and reference displacement case was all made. The commonly aspect was the form of the connection through which the frequency case interacts with the HL\_HR value of posture movement.

## 4. Results and Discussion

### A. Database

Comparison of Vision condition was identified to a variation of the  $Vi-\sigma_{AVG-MAX}$  and  $Vi-\sigma_{AVG-MIN}$  (Figure 3). Comparison of vestibular condition was identified to a variation for the  $Ve-\sigma_{AVG-MAX}$  and  $Ve-\sigma_{AVG-MIN}$  (Figure 4).

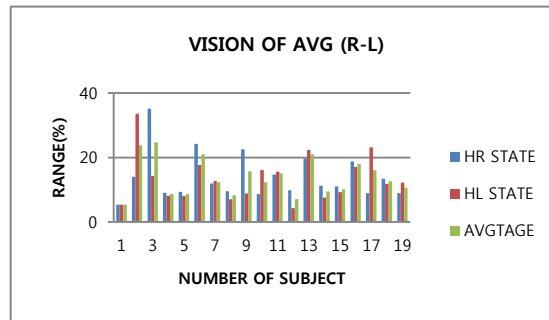


Figure 3. Average data vision condition by the valuation system on the posture

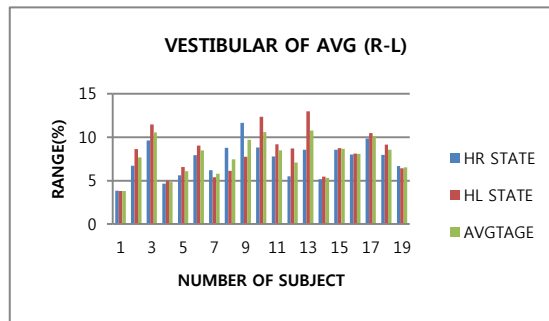
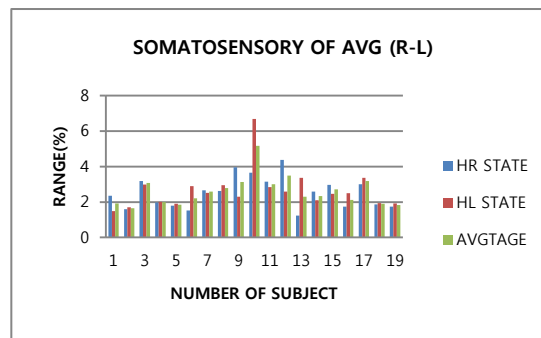
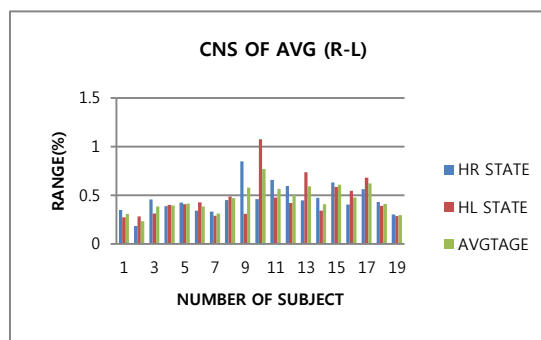


Figure 4. Average data vestibular condition by the valuation system on the posture



**Figure 5. Average data somatosensory condition by the valuation system on the posture**



**Figure 6. Average data CNS condition by the valuation system on the posture**

Comparison of somatosensory condition was identified to a variation for the  $So-\sigma_{AVG-MAX}$  and  $So-\sigma_{AVG-MIN}$  (Figure 5). Comparison of CNS condition was identified to a variation for the  $So-\sigma_{AVG-MAX}$  and  $So-\sigma_{AVG-MIN}$  (Figure 6).

### B. Evaluations

As the assessment of model depends on the valuation system of body movement, average values of these perturbations were checked valuation system comparison data. These systems will be to deduce an algorithm for the evaluation of the stability on the average difference resulted less on R-L condition for body moving of after that was presented control state.

## 5. Conclusion

The variation system of body posture condition was compared for stability by the posture. We used a model of bio parameter on the basis of the move state in the standing posture. We compared the sway movement derived from average of the physical sensing condition. And it is based on the static position, thereby providing a valuation system for the estimating values of these perturbation.

## 6. Acknowledgement

This work was supported by the Bio- Meditech Regional Innovation Center at Eulji University, under the Regional Innovation Center Program (BMRIC- 2014) of Ministry Of Trade, Industry and Energy

## References

- [1] V.S. Stel, J.H. Smit, S.M. Pluijm, P. Lips, "Consequences of falling in older men and women and risk factors for

- health service use and functional decline,” *Age Ageing*, Vol.33, No.1, pp.58–65, Jan. 2004.
- [2] H.C. Diener, J. Dichgans, W. Bruzek, H. Selinka, “Stabilization of human posture during induced oscillations of the body,” *Exp Brain Res*, Vol.45, No.1–2, pp.126– 32, 1982.
- [3] M.G. Carpenter, A. Thorstensson, A.G.Cresswell, “Deceleration affects anticipatory and reactive components of triggered postural responses,” *Exp Brain Res*, Vol. 167, No.3, pp.433–45, Dec. 2005.
- [4] T.C. Huang, Serali Zeadally, N. Chilamkurti, C. KuenShieh, “Design, implementation, and evaluation of a Programmable Bandwidth Aggregation System for home networks,” *Journal of Network and Computer Applications*, Vol.32, pp. 741–759, 2009.
- [5] L. Borel, F. Harlay, C. Lopez, J. Magnanb, A. Chays, M. Lacour, “Walking performance of vestibular-defective patients before and after unilateral vestibular neurectomy,” *Behavioural Brain Research*, Vol.150, pp.191–200, 2004.
- [6] J.L. Kim, K.D. Kim, “Evaluation of the Posture Signal Acquiring System.” *Advanced and Applied Convergence Letters*, Vol.1, pp.24-26, 2013.
- [7] B.J. Lee, Y.W. Kim, K.S. Kim, “Received Power Optimization applying Adaptive Genetic Algorithm in Visible light communication,” *The Journal of The Institute of Internet Broadcasting and Communication*, Vol.13, No.6, pp.147-154, 2013.