

# A Suggestion on How to Use CWPT “How to Evaluate the Effect of Improving Lifestyle”

**Takaki Shimura\***

*Sosei Ltd., Biomedical Research Lab, Japan*

**\*Corresponding author:** Takaki Shimura, Sosei Ltd, Biomedical Research Lab, 400, Tomitsuka-cho, Naka-ku, Hamamatsu-shi, Shizuoka 432-8002, Japan.

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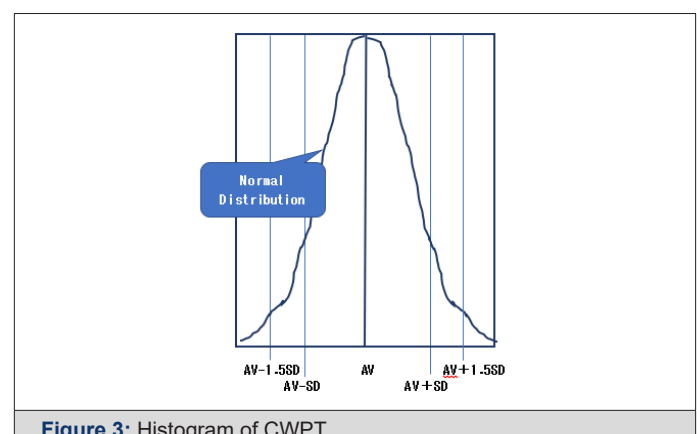
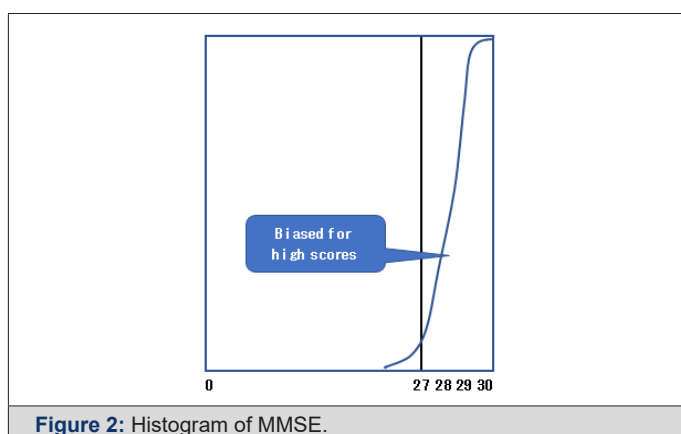
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## History of CWPT

Around 2003, when CWPT (Color words pick-out test) was invented to detect a slight decrease in frontal lobe function before the onset of dementia [1], the development of therapeutic agents for dementia and research on brain rehabilitation began, and CWPT did not receive any attention at that time. Many diagnostic imaging equipment such as MRI, SPECT or X-ray CT and neuropsychological tests such as MMSE or CDR were used to determine the effects of therapeutic drugs and rehabilitation after the onset of dementia.

In recent years, as the paradigm shift of dementia research

to pre-dementia, MCI (Mild Cognitive Impairment) and PCSD (Preclinical Stage of Dementia), has occurred. Please refer to Figure 1 for the transition of progression to dementia. To evaluate the effects of therapeutic drugs and brain rehabilitation economic means other than PET examination have been required. CWPT is a neuro-psychological test that can meet that demand. This is because the MMSE, which has been used after the onset of dementia, has a saturated score (Figure 2). On the other hand, CWPT has a normal distribution of scores, so the slight disorder can be classified by standard deviation (Figure 3).



The evidence and validity of CKPT (Japanese version of CWPT) have been examined, and the correlation with WCST, which is known as a neuropsychological test of the frontal lobe, has been confirmed, and the sensitivity and specificity based on MMSE are

close to 1[2]. In addition, diagnostic criteria by Index1 derived by CKPT (Table 1) are obtained by gender and age group using large-scale data [3].

**Table 1:** Distribution Parameter of Index1.

Male	Average -1.5SD	Average -SD	Average	Average +SD	Average +1.5SD
Sixties	5.1	7.3	11.7	16.1	18.3
Seventies	5	7	10.7	14.4	16.2
Eighties	3	4.9	8.6	12.3	14.2

Female	Average -1.5SD	Average -SD	Average	Average +SD	Average +1.5SD
Sixties	5.9	7.9	11.9	15.9	17.9
Seventies	4.6	6.6	10.6	14.6	16.5
Eighties	2.3	4.5	8.8	13.1	15.3

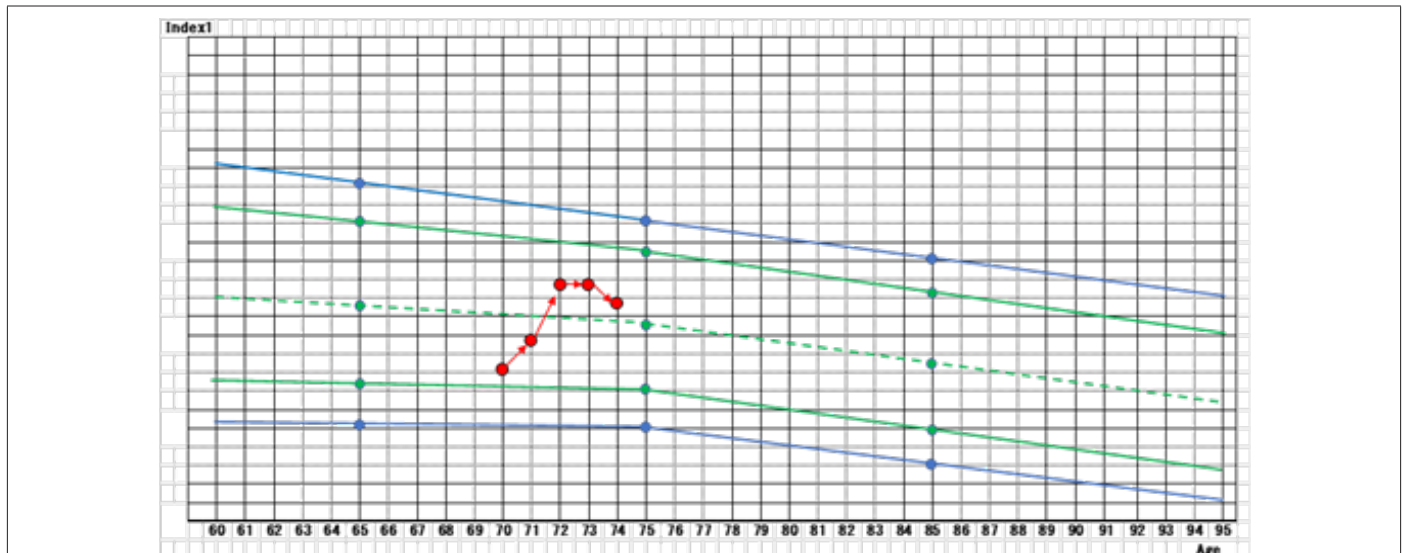
**Note\*:** Average-1.5SD or less: 0.067, Average-SD or less: 0.159.

## How to use CKPT

### Methods

Diagnostic criteria obtained by gender and age group are used as an index to indicate the degree of vitality of the subject's brain, but they are useful for continuous lifestyle-related checks and for

judgment of the effects of brain rehabilitation. It is recommended to apply a transition map such as the flow of the river shown in Figure 4. In the figure, the vertical axis shows Index1, and the horizontal axis shows the age, and the diagnostic reference values of each age are plotted, and five lines are shown from the top, mean value + 1.5SD, mean value + SD, mean value, mean value-SD, mean value -1.5SD.



**Figure 4:** Transition Map of Index1.

### Proposal to Apply the Transition Map to Evaluate the Effect of Improving Lifestyle

Practical research using transition charts has just begun. The subjects are those aged 60 and over who are worried about developing dementia and who do not have color blindness or other

disabilities in their eyes. Workshops are regularly set up to explain the guidelines for dementia prevention presented by WHO in 2019 [4] in an easy-to-understand manner and to take tests using CKPT. The arrows in Figure 4 shows the transition of Index1 year by year. Maintaining good lifestyles with the encouragement of the increase in Index 1 value is expected.

## Conclusion

It is effective to use the transition chart shown here to determine the effect of dementia prevention. It will be utilized for determining the effects of individual tasks, such as exercise or blood pressure management. It can also be applied to the effect investigation of dementia preventive drugs.

## Message to Readers

CWPT can be translated and applied to any national language, so we are looking for people who wish to translate and apply it to their native language. An English version is already available [5], so please email me if you would like to try it.

## References

1. Takaki Shimura, et al. (2003) Japan Patent No. 4887720.
2. Takaki Shimura, Eriko Okuyama, Hironori Ohsugi (2019) CWPT (Color Words Pick-out Test) Available for Classifying the Slight Disorder on the Preclinical Stage of Dementia. HSOA Journal of Alzheimer's and Neurodegenerative Diseases 5(2): 100028.
3. Takaki Shimura, Eriko Okuyama, Hironori Ohsugi (2020) Derivation of Diagnostic Criteria for a slight cognitive Impairment using CKPT (Japanese Version of CWPT). HSOA Journal of Alzheimer's and Neurodegenerative Diseases 6(3): 100046.
4. Takaki Shimura, Eriko Okuyama, Keiko Togami Evans (2020) English Version of CWPT (Color Words Pick-out Test). Archives in Neurology & Neuroscience 8(4).