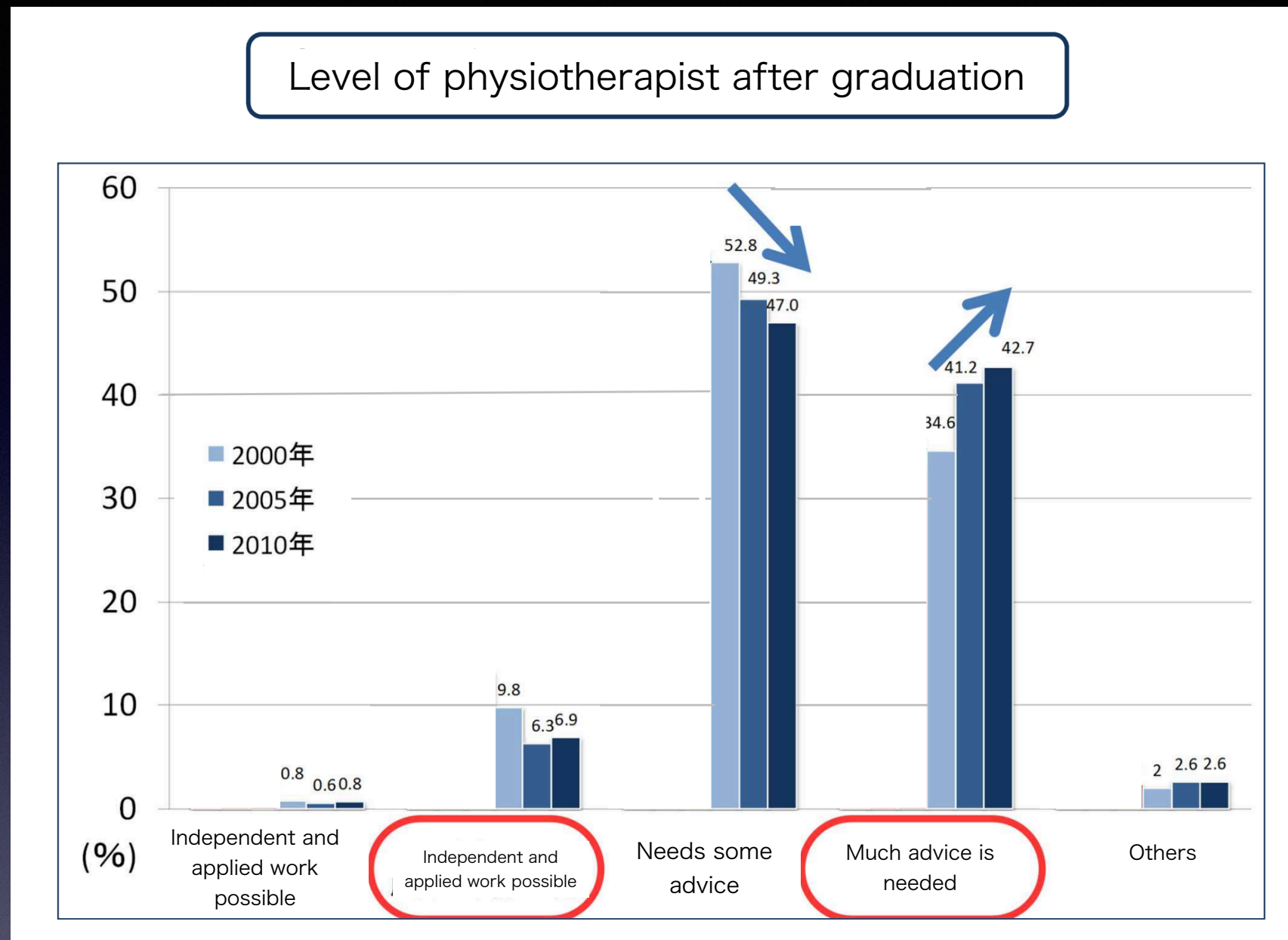


Structuring Practical Knowledge of Physiotherapy to Assist Novice Physiotherapists with Movement Analysis

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Background



Ministry of Health, Labor and Welfare 2017 data

The average age of physiotherapists tends to decrease year by year



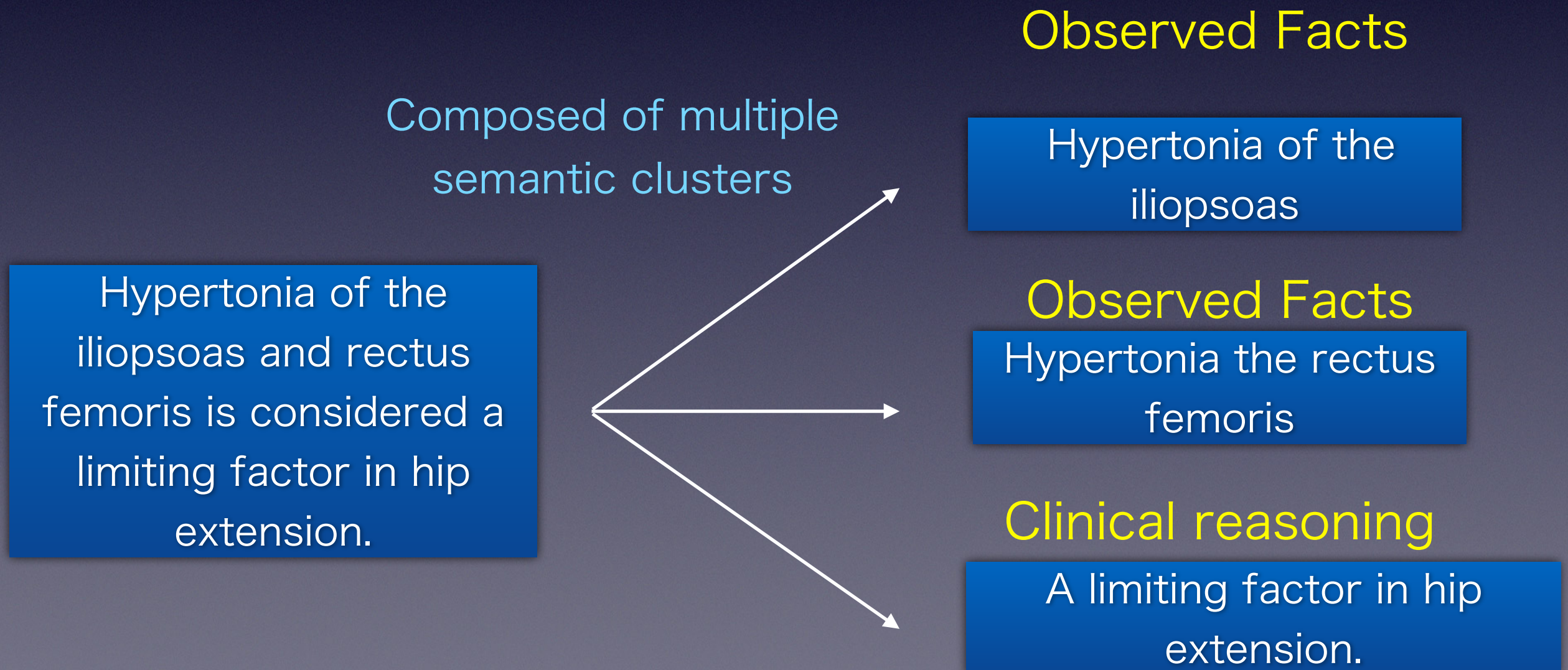
A decline in quality has been pointed out (lack of instructors).

Purpose

Visualization of observations and clinical reasoning of physiotherapists and structuring of practice values

PBPU : Problem Based Physiotherapy Unit

Defined as the smallest unit of knowledge that constitutes physiotherapy



Methods

PBPU Extraction from Movement Analysis

15 physiotherapists (1-21 years of experience) described **movement analysis** and extracted PBPU from their data

The procedure of PBPU extraction

Step 1: Sentence breaks are identified by punctuation marks from movement analysis and **divided into sentence units**

Step 2: From each divided sentence, linguistic omissions and superfluous sentences are processed, and **PBPUs are extracted**

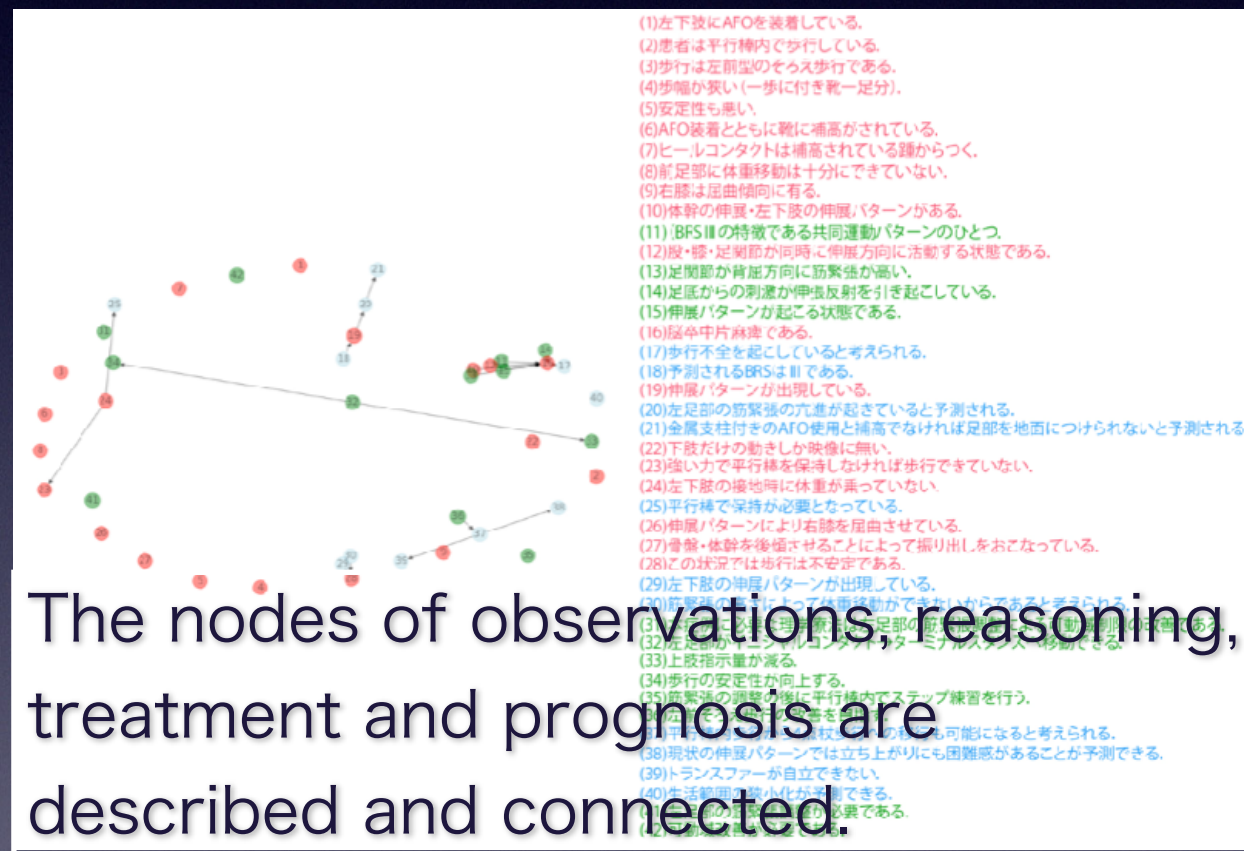
Step 3: The **validity of the extracted PBPUs** is ensured by scrutiny by experienced physiotherapists

Step 4: **Data preparation for PBPU network** Causality annotation is do it manually (Using NetworkX from the python library)

Results

Focusing on causal relationships,
PBPU are linked and visualized by network representation

Expert's Description

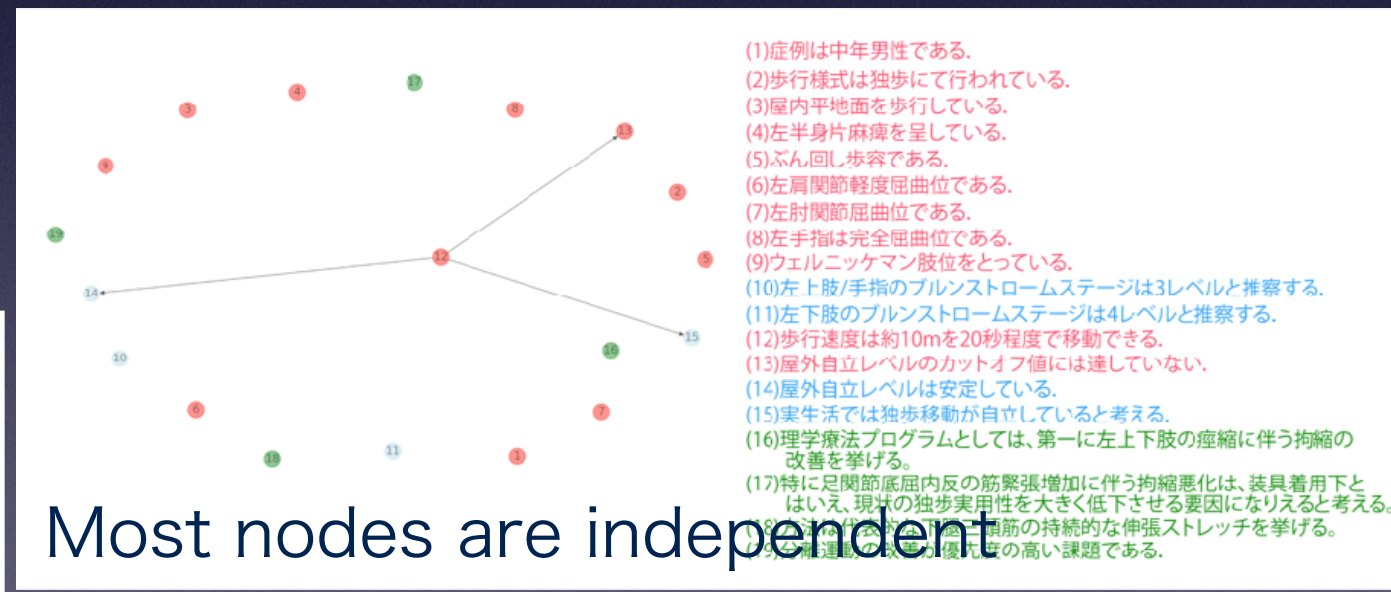


The nodes of observations, reasoning, treatment and prognosis are described and connected.

Appropriate causal links are assigned

Novice's description

Red : Observations
Blue : Reasoning
Green : Plan, etc



Most nodes are independent

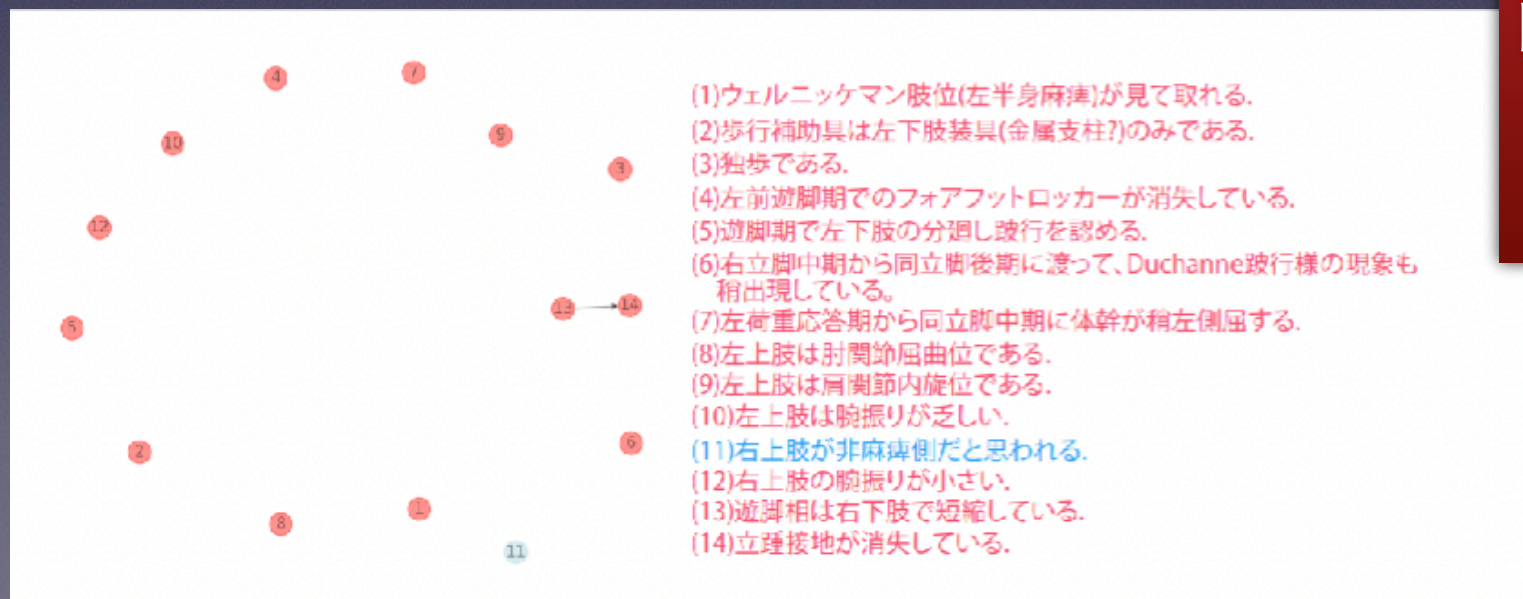
PBPU network allows visualization of the lack of logic

Conclusion

PBPU network allows

- Visualization of description bias
- Descriptions that are not logical
- Differences between novice and expert

Capable of understanding physiotherapists' logical organization skills



If the level of description is even lower, there is no network and the text is simplified.



Need to educate PT to think logically

Implications

This study confirmed the network of understanding of physiotherapists by dividing the text into PBPU's.

Future Outlook

- Reduction in the cost of creating structured data
- Implementation of an educational system for beginning physiotherapists using the proposed visualization method