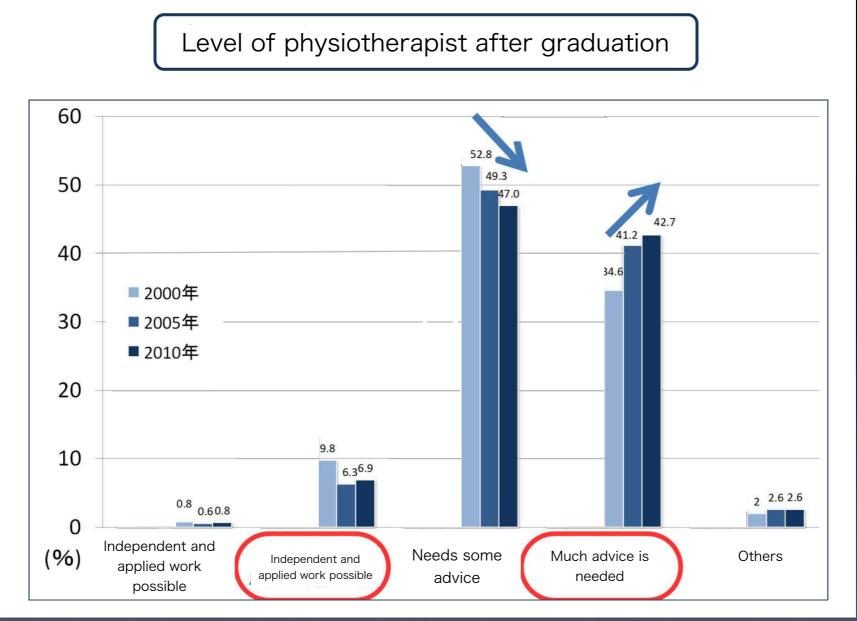
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Structuring Practical Knowledge of Pyhisiotherapy to Assist Novice Physiotherapists with Movement Analysis

- 1) Hirofumi HORI,
- 2) Masato MIYAMOTO
- 2) Mitsunori MATSUSHITA,
- 3) Yoshiyuki TAKAOKA

Biwako Professional University of Rehabilitation, Japan
 Kansai University, Japan
 PTS Corporation, Japan

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 **Observed Facts** Composed of multiple Hypertonia of the semantic clusters iliopsoas Hypertonia of the **Observed Facts** iliopsoas and rectus Hypertonia the rectus femoris is considered a femoris limiting factor in hip Clinical reasoning extension. A limiting factor in hip

extension.

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

<u>Step 1</u>: Sentence breaks are identified by punctuation marks from movement analysis and divided into sentence units
 <u>Step 2</u>: From each divided sentence, linguistic omissions and superfluous sentences are processed, and PBPUs are extracted
 <u>Step 3</u>: The validity of the extracted PBPUs is ensured by scrutiny by experienced physiotherapists
 <u>Step 4</u>: Data preparation for PBPU network Causality annotation is do it manually (Using NetworkX from the python library)

Results

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

Expert's Description Novice's description : Observations Red 1) 方下 液にAFOを 装着し (2)患者は平行棒内で歩行している (3)歩行は左前型のそろえ歩行である 4) 歩幅が狭い(一歩に付き靴一足分) Blue : Reasoning 5)安定性も悪い 6)AFO装着とともに靴に補高がされている ルコンタクトは補高されている踵からつく : Plan, etc Green 0)体験の伸展・左下肢の伸展パターンがある (11) (BFSIIIの特徴である共同運動パターンのひとつ (14)足底からの刺激が伸張反射を引き起こしている (1)症例は中年男性である (15)伸展バターンが起こる状態である (卒中片麻痺である (2)歩行様式は独歩にて行われている 1平地面を歩行している。 「平行橋を保持」 ニッケマン肢位をとっている こよって振り出しをおこなっている (10) 左上肢/手指のブルンストロームステージは3レベルと推察する のブルンストロームステージは4レベルと推察する 速度は約10mを20秒程度で移動できる. The nodes of observations, reasoning, (13)屋外自立レベルのカットオフ値には達していない。 E活では独歩移動が自立していると考える。 treatment and prognosis are (16)理学療法プログラムとしては、第一に左上下肢の痙縮に伴うれ 改善を挙げる described and connected.

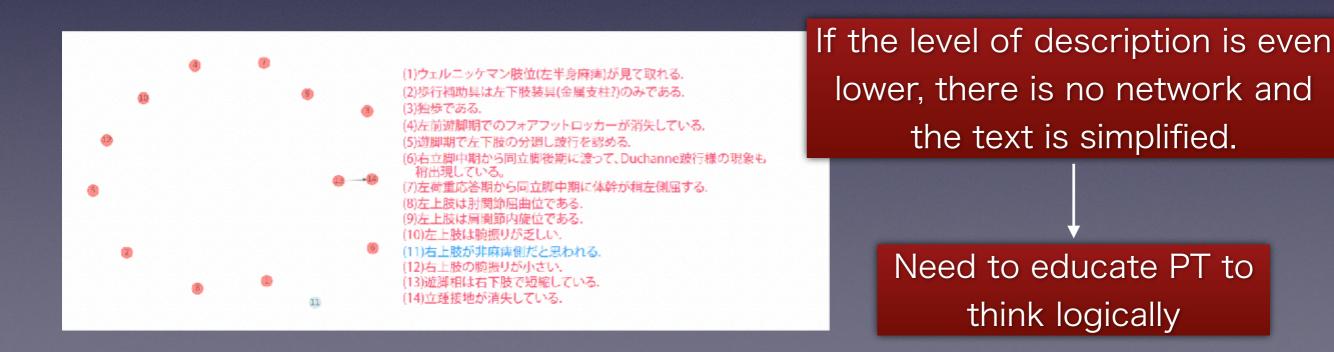
Appropriate causal links are assigned

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





This study confirmed the network of understanding of physiotherapists by dividing the text into PBPUs.

Future Outlook

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