

# Summary of Controlled Interventional Studies from the Evidence-Based Review of Moderate to Severe Acquired Brain Injury

## Introduction

The Evidence-Based Review of Acquired Brain Injury (ERABI) is a synthesized review of the current literature on acquired brain injury (ABI) rehabilitation interventions. ERABI is updated annually, and the 11<sup>th</sup> edition includes articles in English published up to December 2016. Controlled interventional studies include randomized controlled trials (RCT), prospective controlled trials (PCT), cohort, and case control study methodologies. These study methodologies represent a higher level research design, and include a control group for between subject comparisons. We have grouped ABI rehabilitation research into five primary categories; psychosocial, cognitive, medical complications, sensory and motor, and efficacy and models of care. Examining the publication rates of each category over time helps clarify if specific ABI topics are driving ABI research in general.

## Objective

**To evaluate the quality of controlled interventional studies in brain injury evidence over time to determine which areas of ABI rehabilitation research are of interest and driving ABI publications.**

## Methods

- Using the ERABI, all controlled interventional studies which met the following criteria up to 2016 were included:
  - (1) the population sample was >50% moderate-severe ABI,
  - (2) the sample was composed of ≥3 participants, and
  - (3) all participants were adults (≥18 years).
- Author(s), year of publication, intervention, outcome, sample size, Physiotherapy Evidence Database (PEDro) score, and study design were all extracted from each study
- PEDro scores were used as a measure of methodological quality (2). The PEDro tool uses 10 dichotomous (yes/no) questions framed around study methodology, with a point given for each 'yes' answer. Scores <4 are considered poor, 4-5 fair, 6-7 good, and 8-10 excellent.
- Classification of studies into ABI categories was determined by two independent reviewers. Categories were established based on the targeted deficit and created using clinical input.



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## Results

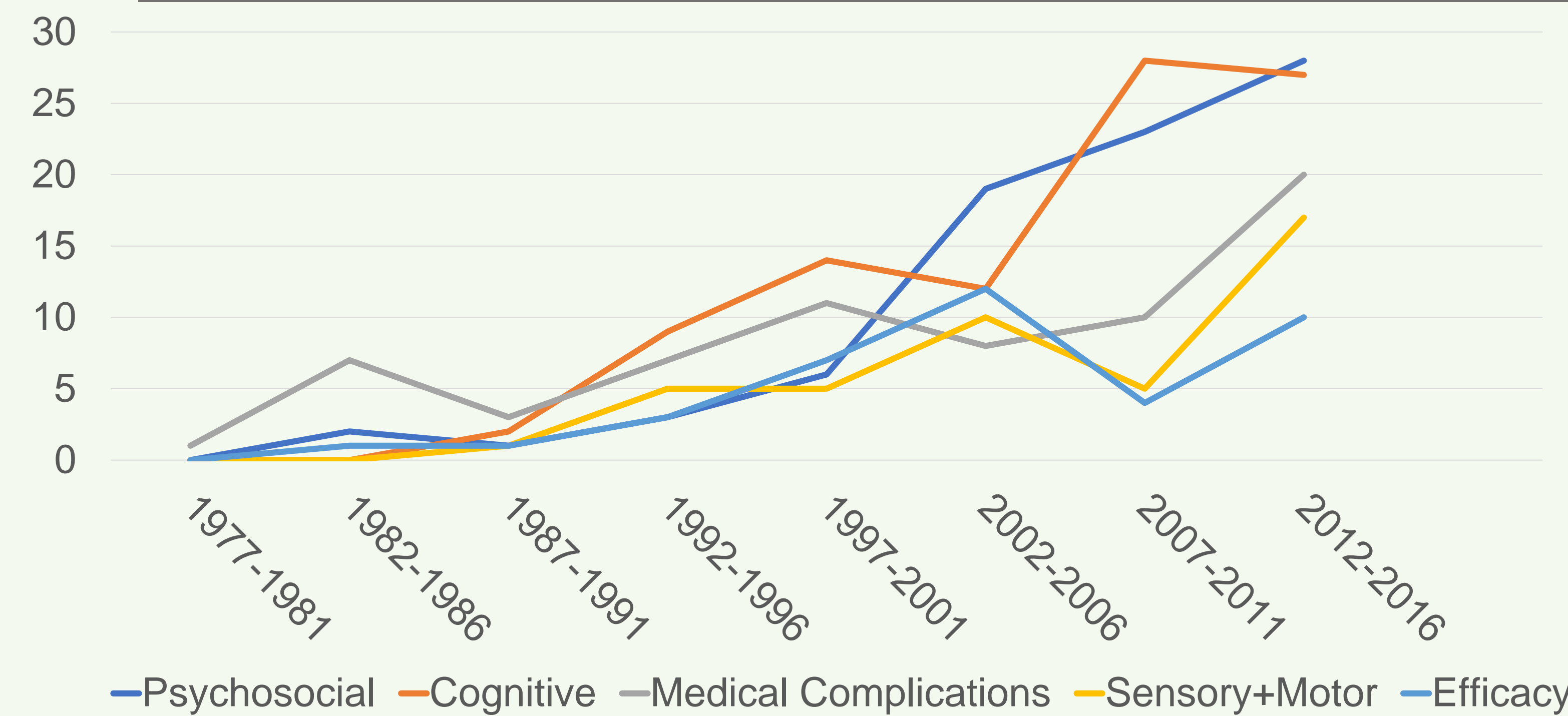


Figure 1. Number of studies published by half decade and research category.

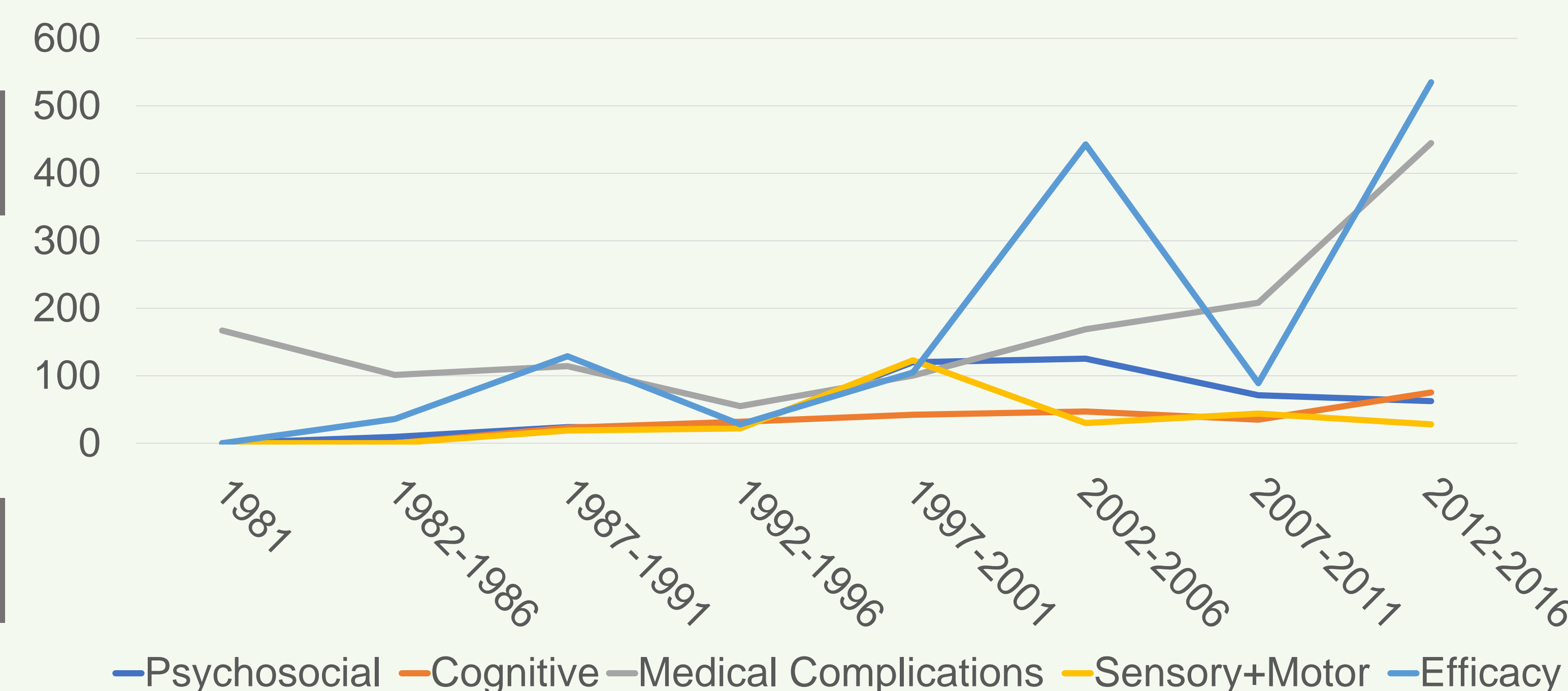


Figure 2. Mean study sample size by half decade and research category.

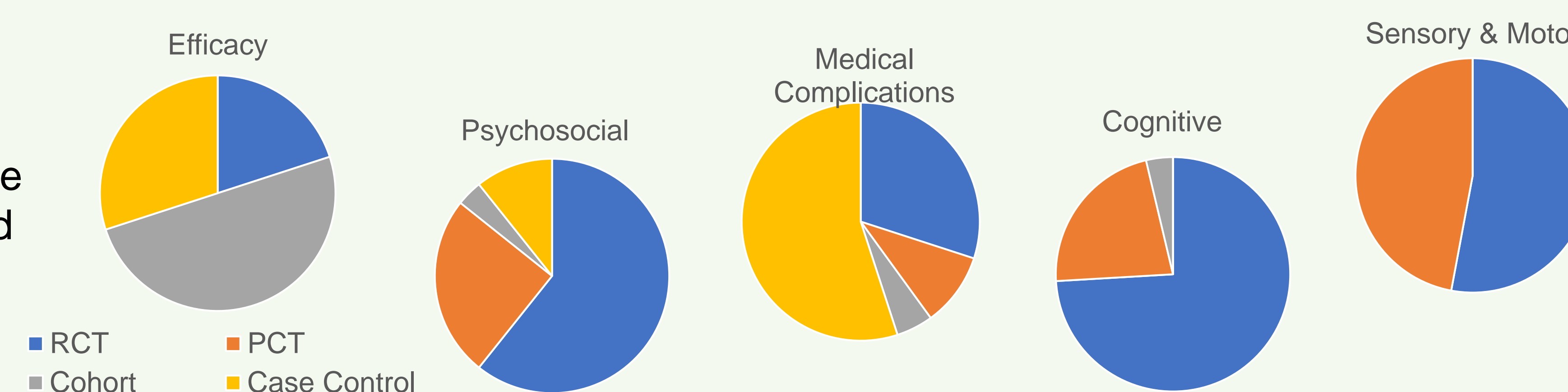


Figure 3. Distribution of total studies in 2012-2016 by type for research categories.

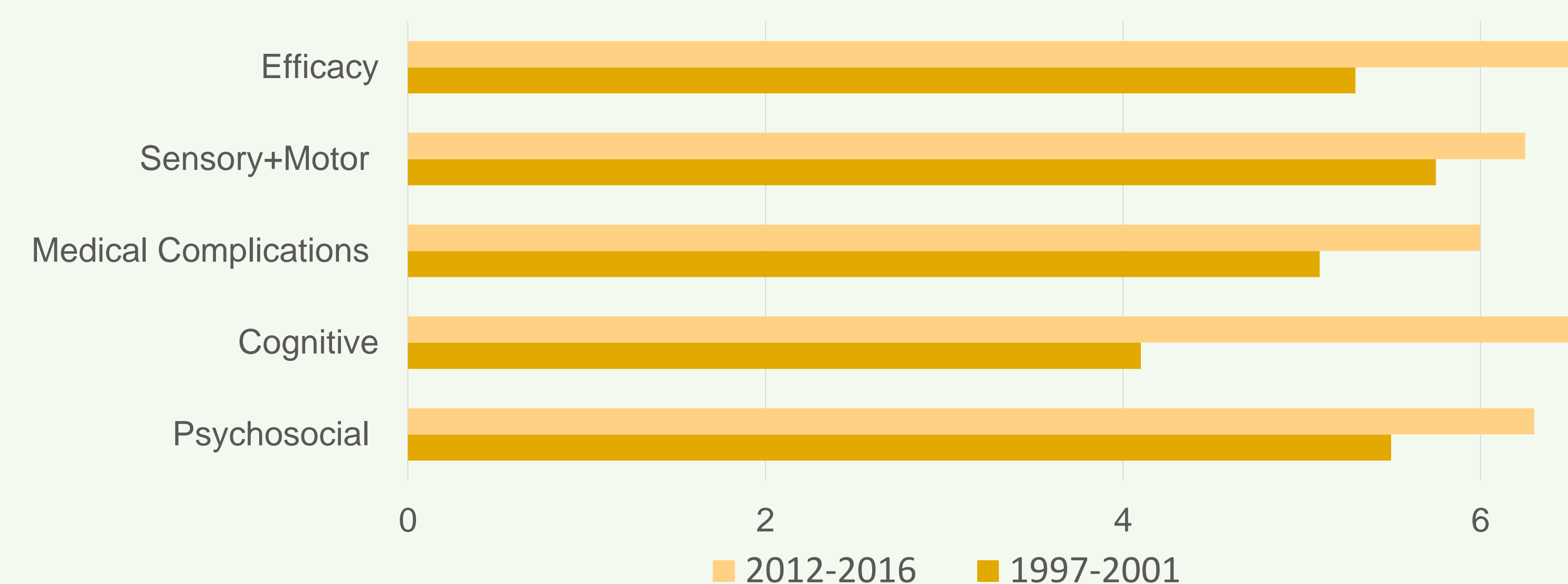


Figure 4. Mean PEDro score by research category in 1997-2001 compared to 2012-2016.

- A total of 320 studies met inclusion criteria, of those 320, 16 met the inclusion criteria for more than one ABI category for a total of 336 studies in this analysis.
- RCTs made up the largest proportion of study designs in all categories, except Efficacy and Models of Care, accounting for 60% of all studies included.
- Case control and cohort studies consistently had the largest sample sizes
- The Medical Complications category had the lowest mean PEDro at 5.7 (out of 10) while the Efficacy and Models of Care category had the largest with 6.75.
- Psychosocial and Cognitive categories have shown the most consistent increase in published studies over time, and make up the largest proportion of published studies.
- All categories show an increase in RCT publication over time.
- All categories, with the exception of the cognitive section, increased the amounts of studies published in the 2012-2016 period compared to the 2007-2011.
- The medical complications and efficacy categories greatly increased their mean sample size for the 2012-2016 period compared to 2007-2011. All other categories had comparable means over time.
- RCTs and PCTs constituted the greatest proportion of studies in the Cognitive, Psychosocial, and Sensory & Motor categories. In the Efficacy and Medical Complications category the majority of studies were cohort and case control studies, respectively.
- The mean PEDro score for every category has increased since 2001. The mean PEDro score for every category has increased above 6 (level 1b evidence) for the first time in the 2012-2016 period.

## Conclusions

Overall, the number of controlled interventional studies being published every year has been consistently increasing over time. This can be seen most strongly for categories which focus on psychosocial and cognitive rehabilitation interventions. However, it is studies focused on medical complications of ABI and efficacy and models of care which are driving higher sample sizes over time. In terms of another measure of methodological quality (PEDro scores), all categories are currently publishing higher level RCTs, with no category having a mean PEDro score below 5.5. Although certain ABI topics seem to be driving ABI research, such as psychosocial and cognitive categories, other categories are improving on measures of methodological quality.

## References

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- (3) World Bank Country and Lending Groups. The World Bank. Working for a World Free of Poverty. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>. Accessed September 6, 2017.