

The Impact of Physical Activity on Fibre Supplement Compliance, Dietary Fibre intake and Adverse Effects in Older Adults: A Secondary Analysis of the APPETITE Randomised Control Trial

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Introduction

Inadequate dietary fibre (DF) intake is documented in older adults¹ and may contribute to constipation², decreased gastrointestinal³ and metabolic health. Physical activity (PA) can improve GI function^{4,5} but evidence on ameliorating the short-term GI effects of of high fibre diets is limited.

This study explored whether PA i) improves DF intake among older adults enrolled in the APPETITE RCT⁶ and ii) enhances compliance and tolerance to a high-fibre supplement.

Methodology

This secondary analysis included 83 community-dwelling adults aged ≥ 65 years from Ireland, Germany and Italy, randomised to a plant-protein fibre (PPF) supplement within a personalised diet (PD) alone or within a PA combined with PA (PD+PA) over 12 weeks. DF was assessed using 3-day foods diaries and 24-hour dietary recalls. Compliance with the PPF and adverse effects (AE) were monitored fortnightly.

Results

Participants in the PD+PA group achieved significantly higher DF intake post-intervention (30.3 +/- 9.8g/day) compared to PD group (23.4 +/- 7.4g/day), as recommended by the FSAI in Ireland.

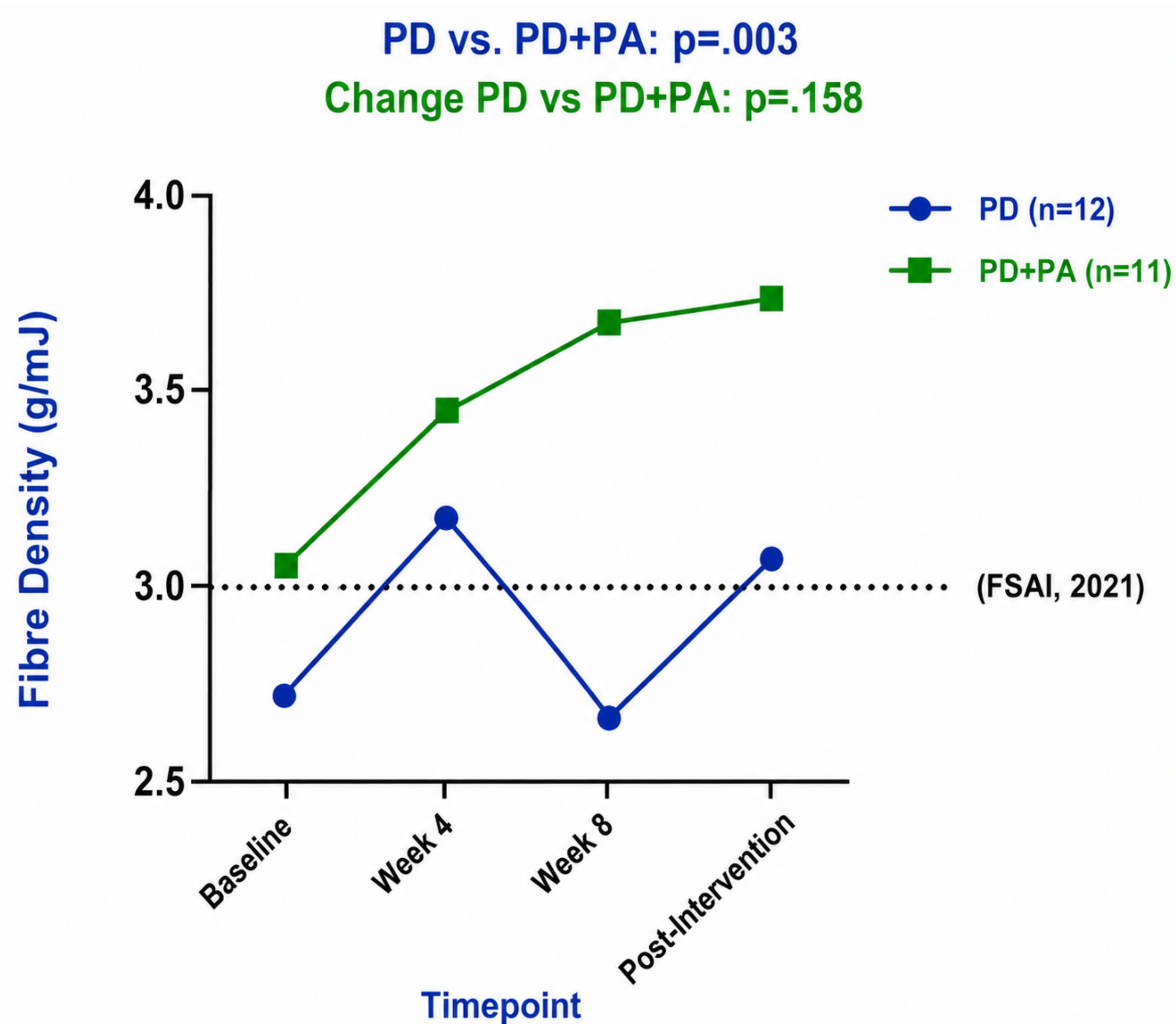


Figure 1. Note. Panel represents mean DF density (g/MJ) at each timepoint for Irish PD (n = 12) and PD + PA (n = 11) participants; the dotted horizontal line indicates the FSAI recommended intake of ≥ 3 g/MJ. p values shown reflect post-intervention between-group differences and change over time.

Results

Participants in the PD+PA group were more likely to meet national/international DF recommendations than PD alone.

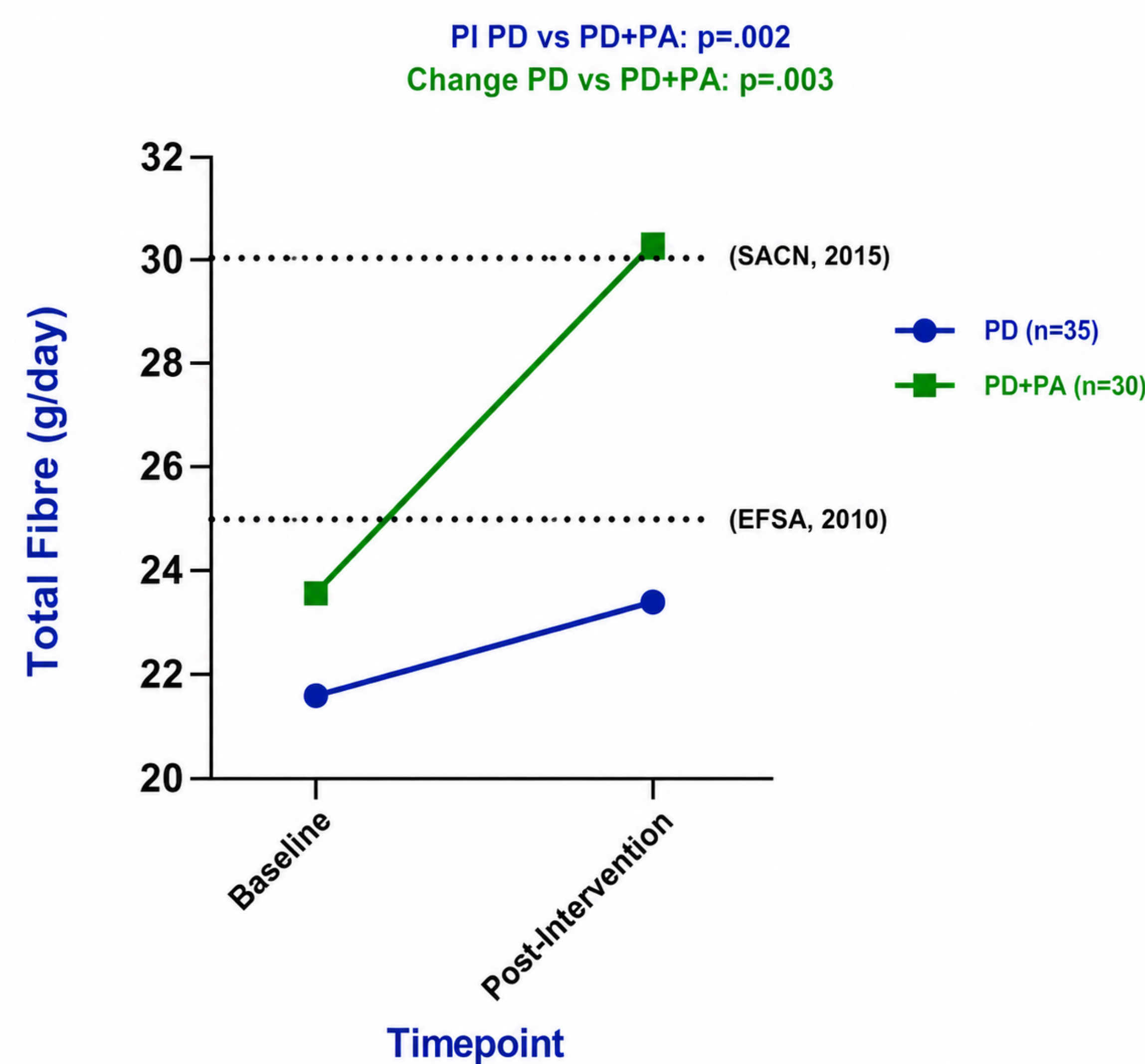


Figure 2. Panel presents mean total fibre intake (g/day) for all PD (n = 35) and PD + PA (n = 30) participants, with horizontal dotted lines indicating EFSA (≥ 25 g/day) and SACN (≥ 30 g/day) recommendations. p values reflect post-intervention between-group differences and changes over time

PA participants reported fewer early GI-related AEs, suggesting improved tolerance. Compliance with PPF supplementation was high across both groups (>85%), with no significant differences.

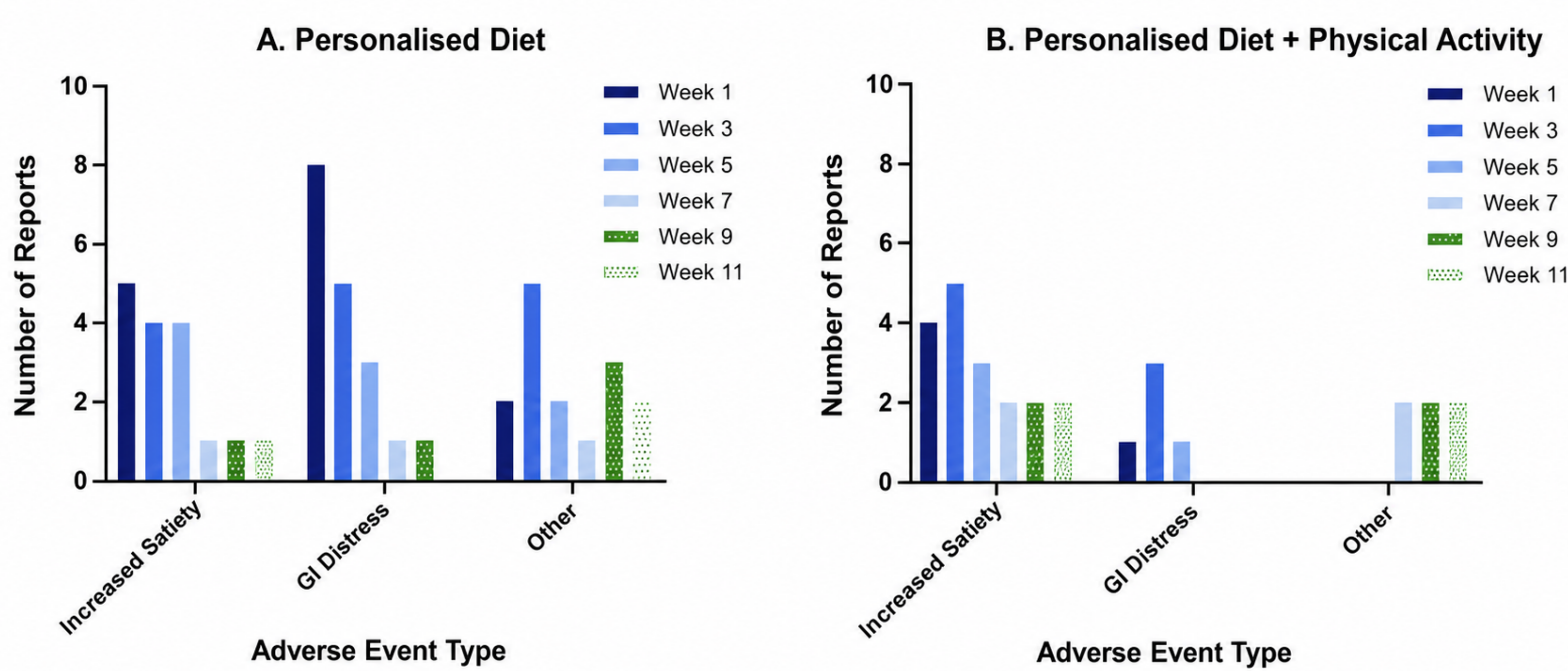


Figure 3. Note. Values represent absolute counts of adverse effects (AEs) reported at weeks 1, 3, 5, 7, 9, and 11. AE categories include Increased Satiety, GI Distress, Other, and None Reported. Data are presented separately for PD and PD+PA groups to illustrate weekly trends and differences in AE patterns across the intervention.

Conclusions

Combining PA with DF supplementation increases DF intake and reduces early GI effects in older adults. These findings support the integration of PA into dietary strategies to meet DF recommendations in older adults.

References:

- Irish Universities Nutrition Alliance. (2022). National Adult Nutrition Survey II: Main Survey Report. [NANS+II+Main+Survey+Report+\(June+2026\).pdf](#)
- Reynolds, A., Mann, J., Cummings, J., Winter, N., Mete, E., & Te Morenga, L. (2019). Carbohydrate quality and human health: a series of systematic reviews and meta-analyses. *The Lancet*, 393(10170), 434–445. [https://doi.org/10.1016/S0140-6736\(18\)31809-9](https://doi.org/10.1016/S0140-6736(18)31809-9)
- Anderson, J.W., Baird, P., Davis, R.H., Ferreri, S., Knudtson, M., Koraym, A., Waters, V. & Williams, C.L. (2009). Health benefits of dietary fiber. *Nutrition Reviews*, 67(4), 188–205. <https://doi.org/10.1111/j.1753-4887.2009.00189.x>
- Bi, L. and Triadafilopoulos, G. (2003). Exercise and gastrointestinal function and disease: an evidence-based review of risks and benefits. *Clinical Gastroenterology and Hepatology*, 1(5), 345–355. [https://doi.org/10.1053/S1542-3565\(03\)00215-2](https://doi.org/10.1053/S1542-3565(03)00215-2)
- Al-Beltagi, M., Saeed, N. K., Bediwy, A. S., El-Sawaf, Y., Elbatary, A., & Elbeltagi, R. (2025). Exploring the gut–exercise link: A systematic review of gastrointestinal disorders in physical activity. *World Journal of Gastroenterology*, 31(22), 106835. <https://doi.org/10.3748/wjg.v31.i22.106835>
- Horner, K. M., Mullen, B., Quinn, A., Scheufele, P., Gola, S., Gonnelli, F., Bozzato, M., Pratt, J., Sala, W., Mullin, S., Kirwan, L., Dardevet, D., Guillet, C., De Vito, G., Visser, M., Volkert, D., & Corish, C. A. (2024). Plant protein, fibre and physical activity solutions to address poor appetite and prevent undernutrition in older adults: Study protocol for the APPETITE randomised controlled trial. *The British Journal of Nutrition*, 132(6), 1–12. <https://doi.org/10.1017/S0007114524002125>