

Intervertebral Differential Dynamics (IDD) Therapy vs. Exercise Based Physical Therapy – Results from a Randomized Controlled Trial

Intervertebral Differenzial Dynamics (IDD) Therapie im Vergleich zur trainingsorientierten Physiotherapie – Ergebnisse einer randomisierten Studie

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Key words

- low back pain
- exercise therapy
- conservative therapy

Schlüsselwörter

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Abstract

Study Design: Prospective, randomized controlled trial.

Objective: To compare the effectiveness of Intervertebral Disc Dynamics (IDD) therapy with an exercise-based physical therapy program in patients with chronic low back pain caused by degenerative disc disease.

Background: IDD therapy is commonly used in clinical practice, but has not been studied extensively in a controlled trials.

Methods: 48 patients with chronic low back pain > 3 months secondary to mild to moderate degenerative disc disease were included. Patients were randomized in a 2:1 ratio to IDD therapy or a physical therapy program based on lumbar stabilization exercises (PT). Patients in both groups had to complete a minimum of 6 treatments over a 6-week period.

Results: In the IDD group, the mean Visual Analog Scale (VAS) score improved from 43.1 to 27.4 (95% CI 2.3–29.1, average 36.4% decrease, $p < 0.05$) after completion of treatment to 22.1 after 1 year (95% CI 7.8–34.1, av. 48.6% decrease, $p < 0.01$). In the PT group the mean VAS score improved from 58.5 to 36.9 (95% CI 0–43.3, av. 37.0% decrease, $p = 0.05$) after completion of treatment to 26.0 (95% CI 13.1–51.9, av. 55.6% decrease, $p < 0.01$) after 1 year. There were no significant differences in mean pain scores between groups at any follow-up interval. The mean Oswestry Disability Index (ODI) improved significantly in both groups only at the 1 year follow-up. There were no significant differences in mean ODI scores between the groups at any follow-up interval.

Conclusions: Patients in both groups experienced a mild to moderate improvement in pain symptoms after completion of treatment, with further improvement at 1 year. There was significant improvement in back-related function only at 1 year. IDD therapy offers similar clinical

Zusammenfassung

Studien Design: Prospektive, randomisierte klinische Studie.

Ziel: Die Effektivität der Intervertebral Differenzial Dynamics (IDD) Therapie wurde mit einer trainingsorientierten Krankengymnastik an Patienten mit chronischen, bandscheibenbedingten Rückenschmerzen verglichen.

Hintergrund: Die IDD Therapie ist eine weit verbreitete physikalisch-medizinische Behandlungsmethode, die bisher nur in wenigen klinischen Studien kritisch untersucht wurde.

Methoden: 48 Patienten mit chronischen, mehr als 3 Monaten bestehenden spezifischen Rückenschmerzen, bedingt durch leichte bis mittelschwere degenerativen Bandscheibenveränderungen, wurden in die Studie aufgenommen. Die Patienten wurden in einem 2:1 Verhältnis IDD Therapie zu stabilisierender Krankengymnastik randomisiert. Die Patienten in beiden Gruppen mussten an mindestens 6 Behandlungen über einen Zeitraum von 6 Wochen teilnehmen.

Ergebnisse: In der IDD Gruppe verbesserte sich der durchschnittliche Schmerzscore (VAS) von 43,1 auf 27,4 nach Behandlungsabschluss (95% Vertrauensintervall 2,3–29,1, durchschnittliche Verbesserung 36,4%, $p < 0,05$) und auf 22,1 nach einem Jahr (95% Vertrauensintervall 7,8–34,1, durchschnittliche Verbesserung 48,6%, $p < 0,01$). In der KG Gruppe verbesserte sich der durchschnittliche Schmerzscore von 58,5 auf 36,9 nach Behandlungsabschluss (95% Vertrauensintervall 0–43,3, durchschnittliche Verbesserung 37,0%, $p = 0,05$) und auf 26,0 nach einem Jahr (95% Vertrauensintervall 13,1–51,9, durchschnittliche Verbesserung 55,6%, $p < 0,01$). Zu keinem Zeitpunkt gab es signifikanten Unterschiede in den Schmerzscore zwischen den Gruppen. In der IDD Gruppe verbesserte sich der durchschnittliche Oswestry Score (ODI) von 26,8% auf 20,4% nach Behandlungsabschluss (95% Vertrauensintervall –1,0–13,8, durchschnittliche Verbesse-

improvement compared to exercise-based physical therapy in patients with symptomatic lumbar degenerative disc disease.

24,1%, n.s.) und auf 13,8% nach einem Jahr (95% Vertrauensintervall 4,8–21,2, durchschnittliche Verbesserung 48,5%, $p < 0,05$). In der KG Gruppe verbesserte sich der durchschnittliche ODI von 33,0% auf 29,1% nach Behandlungsabschluss (95% Vertrauensintervall -15,1–22,8, durchschnittliche Verbesserung 11,7%, n.s.) und auf 17,6% nach einem Jahr (95% Vertrauensintervall -1,9–32,7, durchschnittliche Verbesserung 46,8%, $p < 0,05$). Zu keinem Zeitpunkt gab es signifikanten Unterschiede in den ODI scores zwischen den Gruppen.

Zusammenfassung: In beiden Gruppen wurden signifikante Verbesserungen in den Schmerzscores nach Therapieabschluss festgestellt, die sich ein Jahr nach Therapieabschluss noch weiter verbesserten. Die funktionellen Scores verbesserten sich nur nach einem Jahr, aber nicht unmittelbar nach dem Therapieabschluss. Es gab keine signifikanten Unterschiede in den Ergebnissen im Gruppenvergleich. Diese Studie zeigte keine Unterschiede in den Behandlungsergebnissen zwischen IDD Therapie und stabilisierender Krankengymnastik.



Fig. 1 IDD equipment.

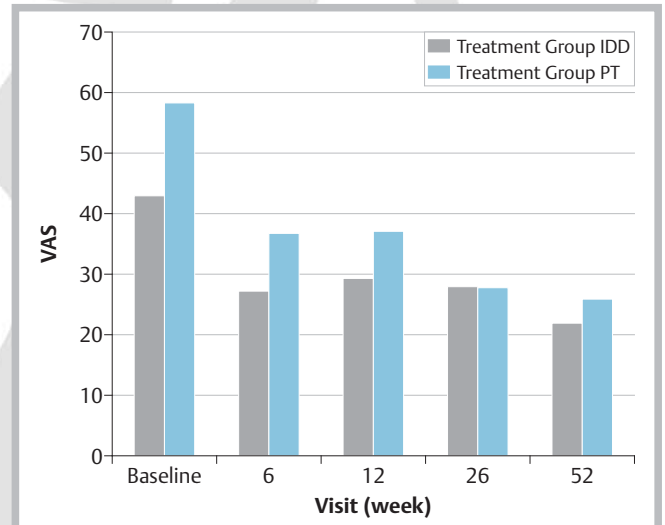


Fig. 3 VAS scores for IDD and PT groups.

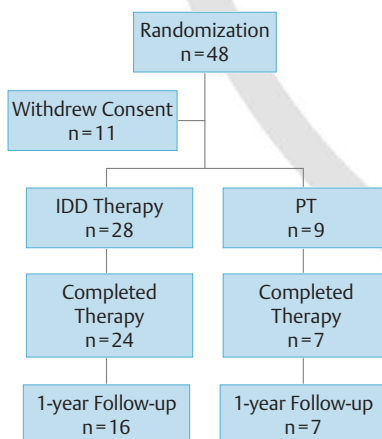


Fig. 2 Randomization table.

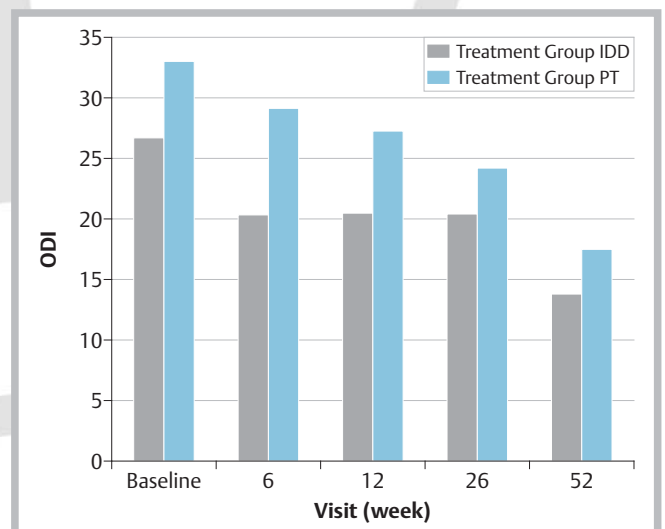


Fig. 4 Oswestry scores for IDD and PT groups.

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Visit (week)	Treatment Group						P-Value, Wilcoxon Signed Rank Test for Differences (2-Sided)
	IDD			PT			
	N	Mean (VAS)	Standard Deviation	N	Mean (VAS)	Standard Deviation	
baseline	28	43.1	22.4	9	58.5	17.9	0.09
6	24	27.4	22.7	7	36.9	22	0.21
12	16	29.4	22.5	6	37	26.1	0.53
26	15	28.1	21.4	6	27.8	12	0.46
52	16	22.1	14.2	7	26	16.7	0.34

Table 1 Comparison of Visual Analogue Scale (VAS) scores between IDD and PT groups by Visit Date.

Visit (week)	Treatment Group						P-Value, Wilcoxon Signed Rank Test for Differences (2-Sided)
	IDD			PT			
	N	Mean (ODI)	Standard Deviation	N	Mean (ODI)	Standard Deviation	
baseline	28	26.8	13.9	9	33	17.9	0.38
6	24	20.4	11.2	7	29.1	18	0.18
12	16	20.6	10.4	6	27.2	14.8	0.25
26	15	20.4	12.7	6	24.2	13.2	0.48
52	16	13.8	9.5	7	17.6	13.6	0.36

Table 2 Comparison of Oswestry Disability Index (ODI) scores between IDD and PT groups by Visit Date.

Visit (week)	Wilcoxon Statistic, Standardized (VAS)	P-value, Wilcoxon Test (2-sided)	Wilcoxon Statistic, Standardized (ODI)	P-value, Wilcoxon Test (2-sided)
0-6	1.25	0.21	1.33	0.18
0-12	0.63	0.53	1.14	0.25
0-26	0.74	0.46	0.7	0.48
0-52	0.94	0.34	0.91	0.36

Table 3 Wilcoxon analysis comparing the in-group improvements between the 2 groups for both VAS and ODI scores (n.s. at all time points).

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