



FOCUS ON
HEALTH

Occupational Therapy, Medical Orthotics, Prosthetics & Arts Therapy

Self-study CPD activity

Activity Reference Number

N2(26) 2028

Topic

Orthoses

Article(s)

Spinal Orthoses

Profession(s)

Occupational Therapist

Medical Orthotist and Prosthetist

Supplementary Occupational Therapist

Supplementary Medical Orthotist and Prosthetist

Orthopaedic Footwear Technician

Occupational Therapy Technician

Occupational Therapy Assistant

Orthopaedic Technical Assistant

This activity is approved for **THREE (3) *Clinical*** Continuing Education Units (CEU's)

Efficacy of Wood Cheneau Rigo (WCR) Bracing in the Idiopathic Scoliosis Population

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INTRODUCTION

Bracing has been the standard of care for the non-operative treatment of idiopathic scoliosis (IS) for decades. In the United States, many scoliosis braces are used, including the Boston, Providence, Charleston Bending, and Rigo Cheneau braces. In recent years, the Rigo Cheneau brace and its variations have gained popularity.¹ One commonly used variation is the Wood Cheneau Rigo (WCR) brace. While the WCR brace follows the Rigo Cheneau concept, the approach differs in three key ways. First, orthotists must complete a fellowship-style training period, often lasting one to two years, before fitting WCR braces independently. Second, all WCR braces are fabricated at Align Clinic headquarters by a small, consistent team of expert orthotists. Third, the WCR brace uses a lower-profile design to encourage adherence. With the increasing popularity of the WCR brace, it is crucial to assess the efficacy of the design in the treatment of IS.

METHOD

This retrospective chart review was approved by the Baylor College of Medicine Institutional Review Board (H-53917).

Participants: Subjects were included in the review if they had a diagnosis of juvenile or adolescent IS and were receiving a brace for the first time. Any prior brace treatment resulted in exclusion from this study. Forty-two subjects were included in the final analysis (35 females and 7 males).

Apparatus: Retrospective chart review. All subjects in this review were evaluated and fit with a WCR brace by one clinician at Align Clinic in the Woodlands, TX.

Procedures: The initial, in-brace, and six-month out-of-brace x-rays were measured across all subjects. All x-rays were read by an external Schroth-trained physical therapist. Data was collected between June 2021 and February 2024.

Data Analysis: The primary outcome was curve progression (6-degree or more increase), stabilization (± 5 degrees), or regression (6 degree or more decrease) based on the six-month out-of-brace (OOB) x-ray.² Descriptive statistics, Pearson Chi-Square, and analysis of variance were used to look for associations between primary outcome and patient characteristics.

RESULTS

Demographic characteristics, including age, diagnosis, gender, and baseline Risser can be found in Table 1. In this retrospective chart review, we found that 11.9% of curves progressed, 45.2% stabilized, and 42.9% regressed (Table 2). There was a significant decrease in the mean of the largest curves from baseline ($32.1 \text{ degrees} \pm 9.3 \text{ degrees}$) to six-months OOB ($27.8 \text{ degrees} \pm 10.0 \text{ degrees}$, $p < .001$). The sum of all curves also significantly decreased from baseline (62.0 ± 21.3) to six-months OOB (57.68 ± 22.5 , $p = .001$). There were no significant relationships found between the primary outcome and other

variables, such as age at delivery, Risser, largest Cobb angle at baseline, in-brace correction, and Rigo brace type.

Table 1. Demographic characteristics for all subjects.

Number of Subjects	42
Age at Fitting	11.9 (SD: 1.8)
Scoliosis Diagnosis	JIS: 5 / AIS: 37
Baseline Risser	0: 20 1: 7 2: 3 3: 7 4: 1 Not visible: 4

Table 2. Primary outcomes across all Rigo brace types.

Primary Outcome	Brace Type Based on Rigo Classification				Across all brace types
	A	B	C	E	
Progression	1	2	1	1	5 (11.9%)
Stabilization	5	2	8	4	19 (45.2%)
Regression	2	3	10	3	18 (42.9%)

DISCUSSION

We found that WCR bracing effectively controls curve progression in patients with IS. Over 40% of subjects achieved out-of-brace correction at the six-month mark, demonstrating that correction can be achieved with scoliosis bracing. About 12% of subjects progressed, which is consistent with previous literature suggesting that a small portion of IS patients have highly aggressive curves.³ Interestingly, none of the participant characteristics were significantly associated with the primary outcome, evincing that correction is possible in more mature patients. Limitations of this retrospective chart review include the small sample size, lack of adherence monitors to track wear-time, and the use of short-term x-ray data. Future studies should examine long-term outcomes for WCR bracing.

CONCLUSION

WCR bracing is an effective treatment method for IS. This study sets the foundational groundwork for future long-term studies on WCR bracing efficacy.

CLINICAL APPLICATIONS

Curve correction appears to be attainable when orthotists take a tri-planar approach to a three-dimensional deformity.

REFERENCES

1. Carroll K. *The Academy TODAY*. 2023;19(1):15–20.
2. Negrini S, Hresko TM, O'Brien JP, et al. *Scoliosis*. 2015;10(8): 1–12.
3. Weinstein SL, Dolan LA, Wright JG, Dobbs MB. *N Engl J Med*. 2013;369(16):1512–1521.



Enhancing Scoliosis Brace Comfort: The Key Role of Orthotists

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INTRODUCTION

While scoliosis bracing is an effective method for controlling curve progression, adherence is often challenging and multifactorial, with both physical and psychosocial components. Since braces must be worn for many hours each day, brace comfort frequently appears in the literature, and superior brace comfort has been suggested to improve brace acceptance. Despite the importance of comfort, it is unclear what factors are associated with brace comfort. Therefore, the purpose of this study was to identify factors associated with brace comfort to better understand the patient experience and improve care.

METHOD

This cross-sectional survey study was approved by the Baylor College of Medicine Institutional Review Board (H-50560). Parental consent and participant assent were obtained prior to beginning the survey.

Participants: Participants were eligible for the study if they had a scoliosis diagnosis and were currently wearing a scoliosis brace.

Apparatus: The survey included the BSSQ-Brace and questions about demographics, diagnosis, bracing appointments, comfort, and overall experience.

Procedures: The survey was distributed via the Scolios-us website, social media, and email newsletter from January to August 2023.

Data Analysis: Descriptive statistics, Mann-Whitney U tests, and Kendall's tau-b correlations were used to analyze responses.

RESULTS

Fifty-one subjects with a median age of 13.5 (IQR: 3) participated in the study. Subjects reported that brace comfort/discomfort (41%) is the biggest barrier to brace adherence, followed by extracurricular activities (29%), peer pressure (10%), brace appearance (6%), and bullying (2%) (Figure 1).

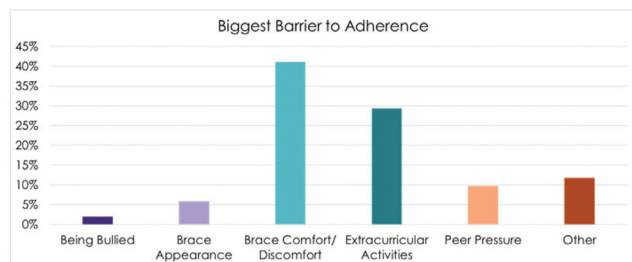


Figure 1. Participants selected their biggest barrier to brace adherence.

Orthotist gender emerged as a key factor, with significant positive associations between women orthotists and brace comfort at the fitting appointment ($U=159.5$, $p=.002$) (Figure 2), ease of adjusting to the brace ($U=192.5$, $p=.015$), and skin integrity ($U=190.0$, $p=.013$).

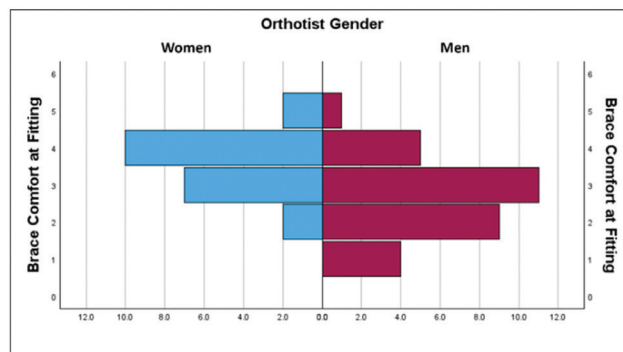


Figure 2. Perceived brace comfort at the end of the fitting appointment, with 1 representing "very uncomfortable" and 5 representing "very comfortable."

Brace comfort at fitting was correlated to ease of adjusting to the brace ($\tau_b=.420$, $p<.001$). Brace pain at the fitting ($U=91.5$, $p=.014$) and current brace pain ($U=81.0$, $p=.046$) were negatively associated with BSSQ-Brace scores, while perceived brace appearance and BSSQ-Brace scores were positively correlated ($\tau_b=.339$, $p=.002$). The orthotists' understanding of subjects' needs emerged as another key factor, demonstrated by strong correlations with perceived brace fit ($\tau_b=.515$, $p<.001$), perceived orthotist skill level ($\tau_b=.660$, $p<.001$), and desire to choose the same orthotist again ($\tau_b=.571$, $p<.001$). Brace type was not found to be associated with brace comfort, ease of adjusting, or BSSQ-Brace scores.

DISCUSSION AND CONCLUSION

Brace comfort appears to be linked to the orthotist, not the brace design. Women orthotists are associated with superior brace comfort at the fitting appointment. Since brace pain and poor brace appearance are associated with increased brace-related stress, orthotists should focus on these details during fitting and follow-up appointments. Finally, orthotists should actively listen to and understand patients' needs to improve patients' bracing experience.

CLINICAL APPLICATIONS

By focusing on brace fit at the fitting appointment, orthotists can improve patients' bracing experience.

Development of a Psychoeducational Support Group Program for Newly Braced Scoliosis Patients: A Pilot Study

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INTRODUCTION

Social support and counseling have been suggested to mitigate the psychological impact of scoliosis and bracing and improve treatment adherence. Psychoeducation, a strategic method of providing information, resources, and coping skills, is often used by mental health providers during counseling. A combination of psychoeducation and social support has not been previously studied in the scoliosis population. Therefore, the purpose of this study was to develop a psychoeducational support group program for adolescents receiving a scoliosis brace and to assess the program's feasibility and efficacy.

METHOD

This pilot study was approved by the Baylor College of Medicine Institutional Review Board (H-51464). Participants were recruited at their initial orthotic evaluation appointment from February to September 2023, at which point informed parental consent and participant assent were obtained.

Participants: Participants were adolescents between the ages of 10 and 17, had an idiopathic scoliosis diagnosis, and were receiving a brace for the first time.

Apparatus: Several outcome measures, including the GAD-7, SRS-22r, BSSQ-Brace, were used to assess participants at brace delivery, before the first psychoeducational session, and after the fourth session. Adherence monitors were used but have been excluded from data analysis due to unreliable readings. The study protocol is outlined in Figure 1.

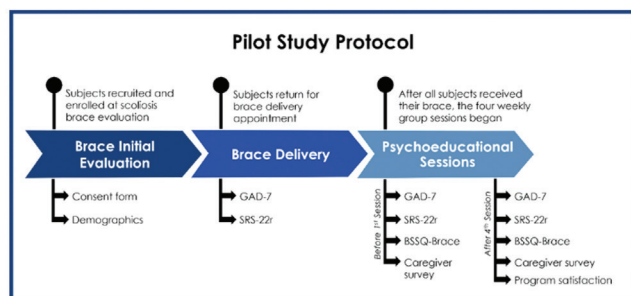


Figure 1. Study protocol. Abbreviations: GAD-7=General Anxiety Disorder-7; SRS-22r=Scoliosis Research Society Score-22 revised; BSSQ-Brace=Bad Sobernheim Stress Questionnaire – Brace.

Procedures: A series of four online group-based psychoeducational sessions was conducted with three cohorts of participants. Topics covered included building community, fostering a strong sense of self, managing emotions, and coping with stress. The sessions were led by doctoral clinical psychology students who were supervised by a clinical psychologist.

Data Analysis: Descriptive statistics, Friedman's test, and Wilcoxon signed-rank test were used to analyze responses.

RESULTS

Ten participants completed the program. One was excluded from data analysis due to incomplete survey responses. Median age of participants was 11 (IQR: 2), and 8 were female. Group size ranged from 3 to 4 participants. Survey responses from all three data collection time points were compared using Friedman's test, and no significant differences were found. Eight participants found the sessions to be helpful or very helpful, and 8 reported that participating in a program like this is important or very important for someone new to bracing. Eight participants reported that they plan to use the strategies they learned to adhere to their prescribed brace treatment, and 8 were confident in their ability to make these changes.

Nine female parents completed the caregiver survey before the first and after the fourth session. One mother also had a scoliosis diagnosis. Although the decrease did not achieve statistical significance, absolute levels of parental perception of child stress were lower following the sessions ($z=-1.77$, $p=.077$), as were perceptions of brace-related emotional outbursts ($z=-1.63$, $p=.102$). Brace-related parental stress also trended downward ($z=-1.41$, $p=.157$). All parents reported that they would recommend a program like this to a parent of a newly braced child.

DISCUSSION

This innovative psychoeducational support group program was well-received by the participating adolescents and their parents. Participants found the program helpful and reported confidence in their ability to adhere to treatment. Limitations of this pilot study include the small sample size, which led to small cohort sizes, and the lack of adherence data.

CONCLUSION

Psychoeducational support group programs show potential in helping adolescent scoliosis patients cope with their diagnosis and accept their brace.

CLINICAL APPLICATIONS

Supporting adolescent scoliosis patients is a challenging but important task for clinicians. Psychoeducational support group programs are another tool clinicians can use to help patients feel emotionally supported.

QUESTIONNAIRE

N2(26)

Spinal Orthoses

INSTRUCTIONS

- Read through the article and answer the multiple-choice questions provided below.
- **Some questions may have more than one correct answer;** in which case you must mark **all** the correct answers.

Spinal orthoses

Introduction

Question 1: Which of the following are **NOT TRUE** about the Wood Cheneau Rigo (WCR) brace?

The WCR:

- A:** Follows the Rigo Cheneau concept
- B:** Differs in approach from the Rigo Cheneau concept
- C:** Uses a higher-profile design to encourage adherence
- D:** Is increasingly popular

Results

Question 2: In the retrospective chart review, it was found that % of curves regressed.

- A:** 11.9%
- B:** 42.9%
- C:** 45.2%

Discussion

Question 3: WCR bracing effectively controls curve progression in patients with idiopathic scoliosis (IS). Over % of subjects achieved out-of-brace correction at the six-month mark.

- A:** 10%
- B:** 45%
- C:** 12%
- D:** 40%

Question 4: Is it **TRUE** that correction is possible in more mature patients?

- A:** YES
- B:** NO

Conclusion

Question 5: This study has which of the following benefits?

- A:** Proves that WCR bracing is an effective treatment method for IS
- B:** Sets the foundational groundwork for future long-term studies on WCR bracing
- C:** Shows no definitive findings

Enhancing Scoliosis Brace Comfort: The Key Role of Orthotists

Introduction

Question 6: Which **ONE** of the following is often challenging and multifactorial, with both physical and psychosocial components?

- A:** Scoliosis brace application
- B:** Adherence

Results

Question 7: Fifty-one subjects with a median age of 13.5 participated. Extracurricular activities were a barrier to brace adherence for subjects?

- A:** 2%
- B:** 10%
- C:** 41%
- D:** 6%
- E:** 29%

Question 8: Is it **TRUE** or **FALSE** that significant positive associations were found between women orthotists and brace comfort at the fitting appointment, ease of adjusting to the brace, and skin integrity?

- A:** TRUE
- B:** FALSE

Discussion and conclusion

Question 9: Brace comfort appears to be linked to which of the following?

- A:** The brace design
- B:** The orthotist
- C:** Undetermined subjective factors

Development of a Psycho-educational Support Group Program for Newly Braced Scoliosis Patients: A Pilot Study

Question 10: The purpose of this study was which of the following?

- A:** To develop a psycho-educational support group program for adolescents receiving a scoliosis brace
- B:** To assess the program's feasibility and efficacy
- C:** To assess to what extent perceived brace comfort was linked to follow-up visits
- D:** All the above

Method

Question 11: Sessions were conducted with three cohorts of participants. Topics covered included the following, **EXCEPT** for:

- A:** Building community
- B:** Fostering a strong sense of self
- C:** Managing movements
- D:** Coping with stress

Results

Question 12: Which of the following is **TRUE**?

The majority of participants:

- A:** Found the sessions to be moderately helpful
- B:** Reported that participating in a program like this was only moderately important for someone new to bracing
- C:** Reported that they planned to use the strategies they learned to adhere to their prescribed brace treatment
- D:** Were uncertain about their ability to make these changes

Discussion

Question 13: Is it **TRUE** that this innovative psycho-educational support group program was well-received by the participating adolescents and their parents?

- A:** YES
- B:** NO

Conclusion

Question 14: Psycho-educational support group programs show potential in helping adolescent scoliosis patients with which of the following?

- A:** To cope with their diagnosis
- B:** To accept their brace

Clinical applications

Question 15: Which of the following are **TRUE**?

- A:** It is a challenging but important task for clinicians to support adolescent scoliosis patients
- B:** Psycho-educational support group programs can be used by clinicians to help patients feel emotionally supported
- C:** None of the above

THE END



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This activity is accredited for **THREE (3) CLINICAL** CEU'S. You have to achieve **70%** to pass this activity.

ANSWER SHEET

N3(25)

Spinal Orthoses

● Time spent on activity																			hour					min				
	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E											
1						6						11																
2						7						12																
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4						9						14																
5						10						15																

How relevant was the content of this activity to your scope of practice?			
			
Not at all	Somewhat	Mostly	Extremely

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