Physical Restraint Intervention: Case Report Evaluation of an Implementation-Reduction Strategy and Long Term Outcome


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Physical restraint is sometimes required with people who have developmental disabilities and exhibit serious challenging behaviors such as aggression, self-injury, and property destruction. When restraint is applied, an individual’s voluntary movement is restricted through immobilization of one or more extremities (e.g., holding hands by the side of the body). Restraint may be indicated to manage crisis situations or planned therapeutically as a component of an intervention plan. Although physical restraint may be clinically justified in some cases, it nevertheless represents an intrusive therapeutic procedure and accordingly, has several disadvantages. First, misapplication of restraint can result in injury to the recipient and those responsible for implementation. For some people, physical restraint is contraindicated because it can function as positive reinforcement. In such a situation, the behaviors that led to restraint would continue at high frequency. Another concern is that the process of applying physical restraint might promote or set the occasion for additional challenging behaviors (e.g., agitation and resistance). Finally, the requirement of physical restraint may place restrictions on the types of educational and habilitation settings available to people who have developmental disabilities. The issues here are that some settings may prohibit restraint or are unable to provide necessary clinical oversight and procedural safeguards.

Therapeutic application of physical restraint also has not been studied long term. That is, does restraint use with an individual decrease over time, or does it become an intervention that has to be maintained many months and years? Clearly, one measure of success is that restraint becomes less frequent, ideally to the point of elimination. Conversely, persistent, continued, and high frequency physical restraint would be judged ineffective. Unfortunately, with rare exception, maintenance outcomes from physical restraint are unavailable.

The purpose of the following case study was twofold. We describe an intervention strategy that had the objective of reducing physical restraint of an adolescent who had developmental disabilities and serious aggressive behavior. The procedure addressed the duration of restraint implementation by manipulating the time required for release from restraint. Our second objective was to conduct maintenance assessment through a multi-year evaluation of restraint frequency and duration.

METHOD

Although physical restraint is sometimes required in therapeutic intervention, methods to reduce restraint use and assessment of long term outcome have not been researched extensively. This case study evaluated an implementation-reduction strategy to decrease physical restraint of an adolescent girl who had developmental disabilities and severe aggressive behavior. The focus of intervention was manipulating the duration of restraint incidents by changing from a behavior-contingent release criterion to a time-based release criterion. Restraint frequency and duration decreased with intervention and were maintained through a 21-month follow-up assessment. Clinical and experimental issues are discussed.

Keywords: aggression, autism, behavior modification, developmental disabilities, differential release contingencies, intellectual disability, mental retardation, pervasive developmental disorder, psychiatric disorder, physical restraint
INDIVIDUAL AND SETTING

Ms. A was a 17.5-year-old female who had a diagnosis of pervasive developmental disorder. She used verbal language in the form of 1-2 word phrases, but had a limited vocabulary and articulation deficits. Her communication was augmented by having her point to pictures when making requests or answering questions. Receptively, she could carry out multiple-step instructions. Ms. A was able to perform most self-care skills semi-independently and could also complete many domestic tasks with adult supervision. She enjoyed craft activities, playing games, doing puzzles, and taking walks. She received 100 mg sertraline daily, a regimen that had been prescribed several months preceding the study and remained in effect throughout.

The setting was a residential program for children and adolescents who had developmental disabilities. Ms. A lived in a staff supervised home located in a suburban community. On weekdays she attended a classroom in a school building that was operated by the program. Her group home included six other children and three staff. In the classroom there were six children, a primary teacher, and two assistants. The focus of Ms. A’s individualized educational plan was teaching her preacademic, self-care, communication, vocational, and leisure skills.

MEASUREMENT

Two measures were recorded: (1) the number of times (frequency) physical restraint was applied as specified by Ms. A’s behavior support plan (described below), and (2) the duration (minutes) of each physical restraint. Staff in classroom and group home locations used a standardized report form to document each measure. The form was completed for each restraint and included the date of application, context in which it occurred, and staff involved. Frequency was determined by summing the total number of incident reports each week. Duration was recorded by entering the time (to the nearest minute) that each physical restraint was initiated and terminated (staff measured duration on a wristwatch or wall clock). The cumulative minutes of restraint each week were divided by the frequency for that week to compute the average duration per physical restraint.

Because this was a clinical case study and not planned as an experimental analysis, formal assessment of interobserver agreement was not conducted. However, each incident report of physical restraint was reviewed by a senior administrator who confirmed the written information with the staff that implemented intervention. No disagreements were identified via this method of post-hoc verification.

DESCRIPTION OF BEHAVIOR SUPPORT PLAN

TARGET BEHAVIOR

A behavior support plan that targeted aggression was in effect with Ms. A during all phases of the case study. Aggression was defined as Ms. A hitting, grabbing, scratching, or biting another person. Attempted aggression (responses that were not completed because staff avoided physical contact) was also included in the definition. Aggression attempts were recorded because when Ms. A tried to make physical contact, she would continue to pursue staff or students with greater intensity until the behavior was completed. Ms. A’s aggressive behavior was a serious concern because it had caused injury to staff and students, was disruptive, and interfered with teaching interactions.

FORMULATION AND INTERVENTION PROCEDURES

The behavior support plan featured several components and was formulated on the hypothesis that aggression had both attention-eliciting and escape-motivated functions. Several antecedent-based interventions included (1) providing individual (1:1) staff supervision when Ms. A was in close proximity to other students, (2) scheduling noncontingent walks (a preferred activity) with her throughout the day, (3) prompting her to request a “break” during instruction (FCT: functional communication training), and (4) using icons to designate the sequence of activities in her daily schedule.

Positive reinforcement in the form of praise and approval was presented each time Ms. A successfully completed activities in her daily schedule (DRA: differential reinforcement of alternative behavior). Reinforcement also consisted of staff intermittently giving her a small edible treat when they delivered social attention.

Physical restraint was a planned intervention that was applied each time actual or attempted aggression was displayed according to guidelines written in the behavior support plan. Restraint was implemented by having two staff guide Ms. A to a protective floor mat, place her in a prone position with one staff positioned at each side of her body, and maintain light pressure on her...
shoulerd and wrists. This method of restraint was selected because earlier treatment with Ms. A indicated that she could not be maintained safely using any other form of physical management. Restraint was determined to be a necessary component of Ms. A’s behavior support plan since historically, high frequency aggression persisted unless this behavior was interrupted physically. The restraint procedure was approved by a private agency responsible for “crisis prevention” training at the residential program.

Oversight, Approval, and Review

Staff responsible for implementing physical restraint received extensive training in this method of intervention. Only trained staff was permitted to work with Ms. A. Procedural oversight was provided by several behavioral clinicians who supervised staff in the classroom and group home settings. In addition, a doctoral-level, licensed psychologist reviewed the behavior support plan developed for Ms. A and conducted monthly reviews with the behavioral clinicians. Use of physical restraint was approved by the state agency responsible for licensing child-care facilities. Also, written informed consent for the application of physical restraint was obtained from Ms. A’s parents.

Procedures

Baseline (4 months)

The previously described behavior support plan was implemented. Using a behavior-contingent release criterion, staff terminated physical restraint when Ms. A demonstrated 60s without (1) struggling against staff, (2) kicking feet, (3) rolling torso, and (4) screaming. When this criterion was achieved, staff released their hold and walked away from the area where physical restraint occurred. Approximately 15-30s later, one staff person instructed Ms. A to return to ongoing activities.

Intervention (8 months)

In this phase, the goal was to reduce the amount of time Ms. A was exposed to physical restraint. The strategy had staff terminate restraint as soon as 60s elapsed instead of delaying their release until the previous behavior-contingent criterion was achieved. We reasoned that discontinuing restraint on a time-based criterion should decrease cumulative restraint duration. Other than this change in the restraint release criterion, all components of the behavior support plan continued.

In reviewing the time-based release criterion with staff, and based on observation, there were occasions where Ms. A displayed extreme agitation and resistance during physical restraint, thereby contraindicating release after 60s. Therefore, if staff implementing physical restraint with Ms. A judged that they could not safely release their hold when 60s passed, they maintained physical contact until the behavior-contingent criterion was achieved for 15s. Although allowing staff discretion in this regard meant that time-based release might not be instituted 100% of the time, it was permitted given the concerns for safety and potential injury. Staff instruction to return Ms. A to ongoing activities subsequent to termination of restraint was identical to the baseline phase.

Follow-up

The follow-up phase of evaluation lasted 21 months. During this span, staff continued to implement the behavior support plan and the time-based release criterion as described previously. Thus, this phase permitted a multi-year maintenance assessment of intervention efficacy.

Results

The average frequency of physical restraint per week each month and the average duration per physical restraint are presented in Figure 1. These data reveal that frequency and duration of physical restraint decreased during intervention, with further reduction recorded throughout the follow-up phase. On three occasions with the time-based release criterion in effect, the average duration of physical restraint exceeded the levels
**Figure 1. Average Frequency of Physical Restraint per Week and Average Duration (Minutes) per Physical Restraint**

**Figure 2. Physical Restraint Frequency and Duration Averaged within Baseline and Intervention Phases**
Figure 3. Percent of Physical Restraints That Occurred for 60s and in Excess of 300s During Baseline and Intervention Phases

- Figure 2 displays the physical restraint frequency and duration data averaged within baseline and intervention (including follow-up) phases. During baseline, the average was 3.2 physical restraints each week, and 5.6 minutes per restraint. With intervention in effect, there was an average of .67 physical restraints each week and an average duration of 3.1 minutes per restraint.

- Additional data are presented in Figure 3, which shows the percentage of physical restraints that occurred for 60s and in excess of 300s during baseline (behavior-contingent release criterion) and intervention (time-based release criterion) phases. The majority of restraints, 55.5%, lasted more than 300s in baseline, and on only one occasion (1.5%) was restraint terminated after only 60s. By contrast, 54.0% of physical restraints were released after 60s during intervention, and 17% exceeded 300s. In total, duration was between 60-300s (3 minutes or less per application) 70.9% of the time with time-based release and 17.4% of the time with behavior-contingent release.

Discussion

With an intervention featuring a time-based release criterion, physical restraint of an adolescent with developmental disabilities was required less frequently and for a shorter duration. Although it might be assumed that termination of restraint based on time and not the occurrence of "calm" behavior would have resulted in more aggression from Ms. A because she was not sufficiently composed at the point of release, this outcome was not encountered. The fact that the frequency of physical restraint decreased when time-based release was programmed also is of interest because it would be unexpected that a manipulation of duration would influence how often restraint was required. One explanation for this finding is that physical restraint perhaps functioned as positive reinforcement and by reducing the duration of time it was applied, Ms. A had less exposure to a "pleasurable" consequence. It is possible, of course, that the

recorded during the baseline (behavior-contingent) phase. This outcome was the result of 1 physical restraint at month 7 lasting 8 minutes, 2 physical restraints at month 11 lasting 4 and 13 minutes (average = 8.5 minutes), and 1 physical restraint at the 25-27 month follow-up period lasting 6 minutes.
positive results with time-based release reflected a naturally occurring response trend although as seen in Figure 1, the frequency of physical restraint increased steadily over the four months of the baseline phase and average duration remained elevated and stable. Furthermore, results cannot be attributed to alterations in Ms. A’s behavior support plan because no changes were made. Therefore, the reasons for the apparent superiority of time-based release as an implementation-reduction strategy are unclear.

Interpretation of our findings might have been more conclusive if an experimental analysis had been performed. For example, the behavior-contingent and time-based release criteria could have been introduced and removed in the context of a reversal design. This more rigorous evaluation would have identified whether the patterns of restraint frequency and duration were replicated within one or more phase changes. As with any case study, there is the limitation that the findings are limited to the behavior of a single individual. An additional constraint is that in light of the aforementioned clinical concerns, staff was unable to adhere exclusively to the time-based release criterion. That is, frequency and duration of physical restraint during intervention may have differed considerably if the 60s criterion had been imposed with better fidelity. Finally, future studies on this topic would be aided by assessment of interobserver agreement and procedural integrity.

Perhaps the most meaningful data from this case study are the results at follow-up, which demonstrated sustained reduction in the frequency of physical restraint and with one exception, a continued decrease in duration. If fact, during the final year of the study (months 22 through 33), only three restraints were applied. It should be emphasized that because each physical restraint corresponded with actual or attempted aggression, this challenging behavior essentially was eliminated. In consequence, Ms. A was able to participate more fully in her educational program and interact positively with staff and peers.

As a preliminary analysis, this case study suggests that there may be an advantage in terminating physical restraint based on the passage of time instead of a criterion linked to behavior. We emphasize that the basis of our report assumes there is a clinically justified rationale for having physical restraint as a component of a comprehensive behavior support plan, and that reducing and eliminating restraint should be a treatment priority. It appears that restraint reduction and elimination strategies can be formulated, implemented effectively, and as documented with Ms. A, produce clinically significant results that endure multiple years post-intervention.

References


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