any of us who treat children with cerebral palsy view pain as occurring primarily as a result of procedures, such as surgery, with stretching to gain range, or with adjustment to braces, casts, and other devices. The potential for long-term pain is acknowledged in the management of structural concerns such as scoliosis, subluxed or dislocated hips, and in the case of significant deformities requiring supportive devices such as custom seating.

However, a large percentage of adolescents and adults with cerebral palsy routinely report chronic pain. Researchers have begun to study these pain issues, although at this point most studies describe the pain rather than isolating specific causes of pain or addressing ways to manage it.

The following anecdotes and empirical evidence provide a broad perspective on sources of pain in adolescents and adults.

Because pain is an issue that creates significant limitations in quality of life, it is a concern for all who treat persons with cerebral palsy.

DEFINITION AND MEASUREMENT ISSUES

Pain is acknowledged to be a complex phenomenon affected by a variety of psychosocial, cognitive, contextual, and even cultural factors. Perceptions of acute pain are initiated by a noxious event, such as bodily trauma, and then transmitted by nociceptive nerve endings through the posterior dorsal horn of the spinal cord where they synapse with cells of higher pain pathways. The signals are then carried through several other pathways to brain centers, where the information is integrated with other processes and finally perceived as acute pain (Williams, 1999).

Biomedical models of pain have been acknowledged as incomplete when explaining pain without pathology and situations where there is an obvious source of pain but no report of its sensation. As a result, models of study have been expanded to include behavioral, social, and cultural factors affecting pain, which help to better explain this complex phenomenon (Turk & Flor, 1999).

When expressive speech is limited and alternative communication methods do not exist, or when significant cognitive impairment exists, accurate reporting of pain may present a problem. Family members or other caregivers are generally believed to be
Valuing Our Clients

V

alue. Webster defines it as “the worth, importance, or usefulness of something or somebody.” My thoughts have been focused on the idea of value lately, particularly in a variety of circumstances. In this fast-paced, hectic world, it is easy to forget to take the time to appreciate the worth or value of many things. One of those “things” is people—particularly our clients. What makes people valuable or important? What is their worth? How do we view our clients? How often do we see them as unique individuals with hopes and dreams and lives beyond the therapy arena?

Personally, I have found that my clients are truly gifts to me. They have taught me a great deal about treatment—what works and what doesn’t. They have taught me that I need to keep challenging myself in order to improve my skills as a therapist and to provide challenges within their therapy programs. My clients have taught me to push myself, and that it is critical that I keep encouraging and nudging them towards a higher level of function.

More than that, these men, women, and children have taught me much about character—thiers and mine. They have taught me about faith, persistence, courage, patience, and love. They have taught me that what are really important in life are people and relationships.

As I watch my clients interact with their family members and friends I see love and laughter, frustration and heartache. I see husbands and wives adoringly encourage their spouses, and parents cheer when their child succeeds in a skill that he or she has been working on for weeks or months. Small gains can be miracles and cause for celebration. I have seen elderly clients persist in activities that are physically demanding and emotionally draining in order to resume their roles within the family and the community. I have seen clients of all ages sadly accept a physical impairment that prevents them from long distance ambulation. And then I’ve observed the joy and excitement in their faces as they anticipate increased independence in learning or relearning to drive a car.

I must admit that I have also dealt with clients and family members that are “difficult.” You know them: those who continue to demand more of our time and energy in order to progress. Or those who direct bottled up anger and fear at others, occasionally in inappropriate ways. They are challenging to say the least! It’s not always easy working with these individuals, but I try to step back and put myself in their shoes and imagine what they must be going through. I try to think about how I would like to be treated. And I find that sometimes they just want someone to listen and to acknowledge their feelings and their fears and relate to them as people instead of just clients.

My clients have taught me many things, including respect and patience and humility. They have taught me to value each of them for themselves and for what they have given to me and to others. I leave my office every day feeling blessed and knowing that those that I touched that day may have touched me more. I hope that you feel the same.

Wendy Drake-Kline
President, NDTA
NDT Research Task Force

By Janet Powell, PhD, OTR

I am very pleased to accept the position of Research Chair of the NDTA. From my perspective of 25+ years of clinical experience with NDT and several years of teaching and conducting research as a faculty member in an occupational therapy program, I see both the incredible potential of NDT to make meaningful changes in our clients’ lives and the need for research to share objective evidence of these changes with a broader community.

As my first step as Research Chair, I have enlisted the help of the following people to be on an research task force: Daiva Banaitis, Nancy Darr, Beth Fisher, Mechthild Rast, Fran Redstone, and Laura Vogtle. The purpose of the task force will be to put together some suggestions for possible research plans that might be used by the NDTA to strengthen the research base of NDT and address the need for evidence-based practice. The members of this initial task force have strong NDT clinical backgrounds and training in research and will work to bring these two perspectives together in ways that maximize the resources of NDTA. Later, it is expected that other people in the association will become involved at whatever level they choose.

We are excited about the possibility of facilitating research related to NDT and incorporating the many and varied skills of the instructors and the general membership. It was a pleasure to talk with many of you at the Orlando Conference and hear your views on this important process. I would like to encourage all NDTA members to continue to contact me with your questions, concerns, and ideas. I am looking forward to working with you.

Janet Powell, PhD, OTR, is an assistant professor, Division of Occupational Therapy at the University of Washington in Seattle, WA. She can be reached at 206 598-5436 or be e-mail at jmpowell@u.washington.edu.

Board Defines NDTA Strategic Plan

As NDTA membership grows, the Board of Directors has looked ahead to some long term goals for the organization. The following strategic plan is a blueprint for action in a near and far time frame. If you would like to be involved in any aspect of implementing this plan, contact the NDTA office or a board member.

- **Research**—Develop a plan to determine the efficacy of NDTA.
- **Education**—Provide 24 short courses in 2005.
- **Alliances**—Initiate relationships within the NDTA culture. Emphasis to be universities and caregivers/families.
- **Leadership**—Improve the flow of information and communication within the organization.
- **Marketing**—Develop a plan to impact on NDTA’s environment.

Making Connections for NDTA

The Alliance Committee is up and running! Because of our broad-based goals to create and foster relationships with our members, professional organizations (national and international), families and caregivers, universities, vendors, and communities, we continue to need support from our membership-at-large. If you are interested in participating in these invaluable endeavors, please contact Wendi McKenna at wendiwade@aol.com.

Tell Your Clients’ Families and Caregivers

NDTA has recently added a new Family and Caregiver membership category. Please inform parents, spouses, interested family members, and caregivers that NDTA membership is now available to them at a cost of $45. Please direct them to our Web site at www.ndta.org for additional information and to complete an on-line membership application. NDTA Education will be offering a course for families and caregivers in 2005. Look for more information in future issues of Network or on the Web site when the 2005 course schedule is posted.
Welcome Two New Region Chairs

REGION 4: Marybeth Aretz has joined Tori J. Rosenthal as co-chair of Region 4. Marybeth is a PT in Denver, Colorado.

REGION 2: Karen Guha is the new chair of Region 2. Karen is a PT in Waterloo, Ontario in Canada.

Call for Nominations for NDTA Board of Directors

NDTA is calling for nominations to the Board of Directors. Serving on the Board offers a tremendous opportunity to make a difference in the growth and direction of the NDT approach. Additional benefits of a board position are professional growth and recognition at a national level.

This is an exciting time for NDTA. There is a sense of goal-directed enthusiasm and a spirit of collaboration throughout the association. Talented and spirited leaders are needed to ensure that we achieve our goals in a timely and responsible manner. Become involved! Make a difference!

Role and responsibilities of the position are:

• Participate as a voting member of the Board of Directors to develop and implement policies guiding and governing NDTA with respect to the Strategic Plan and to ensure fiscally-responsible decision-making.

• Serve as board liaison to a standing committee responsible for implementation of a particular aspect of the NDTA Strategic Plan.

To submit your name for nomination to the Board, contact Paul at NDTA headquarters at paul@ndta.or or call 800/869-9295.

NDTA-approved Active NDT Instructor List coming soon!

Look in the next issue of Network for the current list of active NDT instructors. Be sure your information on the NDTA Web site is up to date so your entry will be correctly included.

Reminder

Items available from the Lending Library are listed in this issue on page 6 along with the new order form on page 7. Please do not use the old forms any longer. New forms are also available on request from paul@ndta.org via e-mail or by fax at 949-376-3456.
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HIGH KUDOS TO NDTA 2004 CONFERENCE

NDTA IS PROUD TO CONGRATULATE THE conference committee, co-chaired by Lois Bly and Carol Nunez-Parker, on the huge success of this year’s biannual conference held in Orlando, Florida on May 5-8, 2004.

The theme, Plasticity and Recovery throughout the Lifespan, was the product of NDTA’s commitment to Dr. Bobath’s belief that the NDT philosophy is “a living concept”. Fortunately, NDTA’s leadership is committed to our member’s educational growth and professional need for networking, and opportunities for both were available in abundance for the over 200 members who attended.

In her keynote address, Kay Folmar emphasized that the biggest benefit of NDTA membership is the commitment of each member to the growth of the NDT philosophy through patient treatment, writing, and research. Becoming active in NDTA’s committee work allows each of us the opportunity to shape NDTA and expand our network of fellow therapists.

Extraordinary educational opportunities included sessions with international speakers who are experts in the area of plasticity and recovery after neurological insults. Randolph Nudo detailed research in primates whose primary motor strip lesions are studied as they recover function. From Carolee Winstein and Richard Macko we learned about constraint-induced movement therapy. We heard information on national multi-site research studies and the necessary quest for the best practice as we integrate new theories into our practice. Mark Ylvisaker discussed treatment for cognitive and language impairments and Gay Lloyd Pinder and Brett Nirider covered enriched therapy and home environments.

Pre-conference courses offered hands-on training in aquatic therapy with Jane Styer-Acevedo and using taping as an adjunct to NDT with Judi Biernan and Monica Diamond. Nationally recognized exhibitors and staffed research-poster presentations (along with good food!) completed the conference.

Join us in 2006 for our next NDTA conference. You won’t want to miss it.

BORROWING MATERIALS FROM THE NDTA LENDING LIBRARY:
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Thinking Ahead: Retirement Planning

COMMON MISTAKES IN INVESTING FOR RETIREMENT

By Tom Winter, MBA

The first in a series of investment columns for therapists who own their own practices and others interested in retirement planning.

Whether you’re a seasoned investor or you’re just getting in the habit of putting money away, saving for retirement takes discipline and strict adherence to a well-laid-out plan. Sometimes it may seem far away, but preparing now for the time when you’ll be done bringing home a regular paycheck is critically important. And unfortunately, the prospect of running out of money during retirement is a very real possibility. To make sure you’re on the right track with your retirement savings, take a moment to review the following mistakes investors make, because recognizing them is the first step in avoiding them.

Forgetting about inflation: Since the annual rate of inflation can seem like such a small number, you may not realize just how much damage it can do to your retirement savings. But because of this gradual increase in prices, your cost of living will likely double, or even triple, over the next 20 to 30 years. Conducting a simple financial analysis now—taking into account your current expenses, inflation, taxes and annual savings—will help to ensure you’re prepared to keep up with rising costs.

Lack of proper asset allocation: The term asset allocation refers to the combination of stocks, bonds and cash in your portfolio and their proportions to one another. The main goal of allocation is to balance your risk and take advantage of return potential at the same time. If your assets are not properly allocated, you could be investing too conservatively or exposing your portfolio to undue risk, depending on your stage in life and your risk tolerance. In either case, having your portfolio out of line with your financial goals only hampers your savings progress.

Underestimating taxes: Just as inflation can eat away at your investment savings, taxes can take a hefty toll on your money as well. Including tax-deferred accounts in your retirement plan can lessen the blow, allowing your money to accumulate free of taxes until the time you choose to withdraw funds. Simply put, this leaves you with more money to generate more retirement income for a longer period of time. Examples of tax-deferred savings options include annuities, IRAs and 401(k) plans. Roth IRAs also provide tax-deferred savings with the added benefit of income-tax free withdrawals during retirement if certain conditions are met.

Underestimating retirement spending: Another big mistake people make when planning for retirement is assuming that they will not need nearly as much income to sustain their retirement lifestyle. However, some find themselves spending as much as 85 percent of their pre-retirement income—or even more—once they reach retirement. Taking more vacations, making additional home improvements, and even eating out more often can all add up and put a strain on your retirement income. Most people also fail to plan for health care, long-term care and other unexpected expenses.

Unrealistic investment expectations: If you try to time the market by staying out when prices are down and looking for bargains to jump back in when it’s up, chances are you’ll see it’s a strategy that seldom works. Saving for retirement requires a long-term outlook, and staying focused on your goals is essential. Make a plan and then stick to it by getting in the market and staying there.

While these are just a few of the mistakes investors make, you can see that it’s easy to get off track with your retirement savings. Regardless of where you currently find yourself on the road to retirement, take the time now to plan ahead so you can avoid making big mistakes.

* Any withdrawal before the age of 59 1/2 may be subject to a 10% IRS penalty, and taxes will be due upon withdrawal.

Thomas A. Winter, MBA, is an investment advisor at A. G. Edwards & Sons, Inc., Member SIPC. He can be reached at thomaswinter@AGEdwards.com
For children and adults with disabilities, so many areas of function may be affected that it is sometimes difficult for families to know where to turn when a loved one needs assistance. The three disciplines of therapy—physical, occupational, and speech language—each fill vital roles in the team of professionals that work with individuals with disabilities and offer a wide range of services.

**PHYSICAL THERAPY**

Mobility needs are addressed primarily by the physical therapist (PT). Through assessment, the PT identifies factors contributing to each individual’s limitations and designs a plan for treatment. PTs help people gain greater function by treating the many systems of the body that affect posture and movement. These include motor control, the sensory systems (i.e. vision as it relates to posture and movement, modulation of touch, awareness of joint and limb position, and balance sense); the skeletal system, including muscle length and strength; and skin condition. They often teach walking skills, with or without walkers and canes, and other mobility skills such as getting in and out of bed or a sitting position, up and down stairs.

For children, PTs help with skills that range from holding up their heads to sports skills. PTs also look after the health and education of caregivers by teaching correct body mechanics and assisting with identifying, acquiring, using, and maintaining durable medical equipment such as wheelchairs, walkers, and lifts.

**OCCUPATIONAL THERAPY**

Fulfilling life roles is the goal area the occupational therapist (OT) concentrates on when working with individuals. OTs, too, evaluate and treat posture and movement as it relates to the skills of dressing, eating, grooming and hygiene, play and school skills, and home and work roles. They address motor control and sensory function for appropriate responses to all situations. In addition to providing hands-on treatment, OTs can fabricate or recommend splints to support joints, improve function, or prevent contractures. They teach strategies and skills to enhance the individual’s independence. They consult with employers and educators to accommodate and include each individual in all environments. OTs work side by side with the other disciplines regarding equipment and instructing caregivers as needed.

**SPEECH/LANGUAGE THERAPY**

The ability to communicate one’s needs and feelings is a skill essential to life. The speech language pathologist (SLP) will determine each individual’s abilities and limitations in functional communication, cognitive skills, and eating/swallowing skills. It may also be necessary for an SLP to explore the variety of augmentative equipment to enable the individual to make his or her wants and needs known to others. Through an SLP’s management of posture and movement as it relates to these needs, guided repetition of newly acquired skills and/or compensatory strategies, individuals may be able to eat safely, access simple or complex communication systems, produce more easily understood speech, and expand their language skills.

Training in Neuro-Developmental Treatment (NDT) is available to therapists of all three disciplines. It ranges from introductory concepts and techniques to advanced evaluation skills and weeks of practical experience. Once trained, therapists use an analytical and problem-solving approach to evaluate the likely causes of posture and movement dysfunction. While a comprehensive description of the complexities of NDT is too long for this column, a simple description is that an NDT-trained therapist has intensely studied the complexities of posture and movement as they relate to functional skills. Therapists who are NDT trained recognize the need for team interaction, as many of the people they treat have needs in several areas of function.

Of course, all therapists, no matter what discipline or the extent and focus of their training, are as varied as the individuals they serve. While the options for treatment are vast, not every one will fit every individual. The families of individuals with disabilities have a daunting task in finding what is best for their loved one. It is well worth the time to explore all the alternatives to find the one that is the most satisfactory fit. Given all of the options, choosing to participate in therapy can be a journey of exploration toward a better quality of life.
NDTA SEMINARS
Neuro-Developmental Treatment Association
2004 Course Calendar

SHREVEPORT, LOUISIANA
July 16-18: NDT—Managing Treatment in Adult Hemiplegia
Nicky Schmidt, NDTA Coordinator Instructor

TROY, NEW YORK
July 19-23: NDT Five Day Intro to Adult Hemiplegia
Teddy Parkinson, PT, and Cathy Hazzard, PT, NDTA Coordinator Instructors

SEATTLE, WASHINGTON
August 19-21: NDT Introduction to Pediatrics
Brett Nirider, PT, NDTA Coordinator Instructor

SHEPARD, MI
August 27-29: Current Concepts in Neurodevelopmental Treatment
Linda Kliebhan, PT, NDTA Coordinator Instructor

HOUSTON, TEXAS
September 24-26: Beyond Weight Bearing: Developing Hand Function in Children and Adolescents
Lezlie Adler, NDTA OT Instructor

MARIETTA, OH
October 1-3: Management of the Adult Neurological Patient: Achieving Functional Goals Using the NDT Approach
Monica Diamond, NDTA Coordinator Instructor

SALT LAKE CITY, UTAH
October 8-10: Introduction to NDT in Managing Adult Hemiplegia
Kay Folmar, NDTA Coordinator Instructor

AUSTIN, TEXAS
October 16-17: Pediatric NDT for Children with Different Kinds of Cerebral Palsy
Lauren Beeler, NDTA Coordinator Instructor
There will be a follow-up two-day seminar in early Spring of 2005. Only participants who took the first seminar will be allowed to register for the follow-up.

TROY, NEW YORK
November 5-7: An NDT Key to Baby Treatment: Identifying and Using Trunk Components for Functional Movements in the Baby From 3-12 months
Sherry Arndt, NDTA Coordinator Instructor

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hallmark of many adult pain scales relies upon self-reporting by the patient, but children with severe neurologic disabilities typically cannot verbalize their pain. In this case, behavior, rather than self-reporting, must be considered.

The Paediatric Pain Profile (PPP), developed by Anne Hunt and colleagues, is a behavior rating scale for the assessment of pain in pediatric patients. The behaviors in the PPP were derived from cues physicians considered indicative of pain. The scale includes various indicators in the categories of facial expressions, cry, movement, posture, and social interest in surroundings.

This study by Hunt et al reports on the final stage of validation of the PPP before it is available for widespread use by pediatric clinicians. Three studies preceded this study. In those, the PPP was found to be reliable and have validity as scored from video case studies. The current study looked at the reliability and validity of this tool when used within a clinical setting, which is of most interest to many practicing therapists.

Subjects included 140 children with severe neurological and cognitive impairments who were unable to communicate through expressive speech or any augmentative speech devices. The children were ages one- to eighteen-years old. Ninety percent of the children had a motor-skills developmental age of 12 months or less. None of the children had communicative ability above the age of 29 months.

Researchers for the study interviewed the families of these children within their homes, and the parents retrospectively rated their child’s behavior, both when the child appeared to be having a good day and when the child was having a day of pain. Ninety-five percent of the parents reported that their child had at least one current or recurrent pain, and forty percent of the parents reported that their child also had pain from a secondary system. Many parents rated that their child had pain even on a “best-day” scenario.

As NDT pediatric clinicians, we consider the impact of pain upon our client’s functional status and upon the family’s life. These statistics verify what many of us have observed in treatment of our own individual caseloads.

In the Hunt study, the PPP scale scores were plotted against a five-point verbal rating scale categorizing severity of pain that was previously matched with cortisol levels in saliva taken from children as an objective indicator and correlate of pain. Parents and a co-rater together then watched the child over a five-minute period and each person completed the PPP independently in order to establish interrater reliability.

As NDT pediatric clinicians, we consider the impact of pain upon our client’s functional status and upon the family’s life.

The results suggested that “familiarity with the child did not influence the extent of agreement with the parent on the PPP score”. Each item on the 20-behavior scale was also analyzed for internal consistency.

The subjects were then divided into two groups based upon future intervention: a group of children who would receive a short-acting analgesic for pain at some point, and a group of children who would undergo orthopedic or gastrointestinal surgery. No child received treatment specifically for the study.

In the short-acting analgesic group, parents were asked to use the PPP if their child was administered an analgesic for pain during the weeks following the initial interview and interrater reliability construct. Treatment with an analgesic resulted in reduction in the PPP score of pain by fifty percent or more in sixty-eight percent of the children, demonstrating responsiveness of the PPP to changes in pain in this population. Interrater reliability was also reassessed with this sub-population and appeared to be excellent.

The post-operative group was comprised of thirty children who were given analgesics either through an intravenous line or through an epidural. The dosing of the analgesics was either on a regular schedule or on an “as needed” basis. The highest PPP scores occurred within the first 24 hours after surgery in forty-seven percent of the children. Interestingly, while the researchers had hypothesized that the PPP scores would be highest on the first postoperative day, the average pain scores did not change across postoperative days. In fact, the modal time for the highest PPP pain score was 56 hours after surgery. The researchers speculate that this was possibly the time epidural and intravenous analgesic dosing was discontinued.

The PPP may become a widely used clinical pain scale for the severely neurologically and cognitively impaired population due to its excellent interrater reliability and validity. Limitations, as pointed out by the authors themselves, include basing an individual’s perception of pain as reported by an outsider observer. Also, there are no objective criteria against which to judge the PPP. In a study prior to this one (study number three), researchers attempted to correlate saliva cortisol levels collected from the subjects to the PPP scores as rated by an outside observer. Cortisol levels were collected during the morning and on a reference day. Presumably, increased cortisol levels could be taken as an indicator of stress with potential correlation to pain. However, a positive correlation between cortisol levels and the PPP scores was not consistent across all subjects studied and the researchers suggest further study is warranted.

The authors envision the PPP being used as part of a child’s medical paperwork that would accompany the child during visits to medical practitioners. The retrospective rating of a child’s behavior during pain would provide a
able to read non-verbal behaviors that demonstrate pain, such as wincing, withdrawal, change of color, and behavioral changes (Biersdorff, 1994). However anecdotal reports exist of individuals who do not seem responsive to experiences commonly perceived as painful. Biersdorff (1994) collected third-party-reported pain responses in a sample of 124 adults with developmental disabilities in order to identify those insensitive or indifferent to pain. Twenty-five per cent of the sample appeared insensitive or indifferent to pain and had co-existing moderate to severe cognitive impairments. This trait resulted in delayed treatment of conditions that were potentially life-threatening among the subjects, presenting real challenges for health care professionals who provide care for them. Twenty-four per cent of the sample studied had cerebral palsy and other motor disorders, reflecting the likely presence of insensitivity and indifference to pain in persons with cerebral palsy. Identification of such issues indicates that pain may be under-reported in adults with cerebral palsy.

**SOURCES OF PAIN IN ADULTHOOD**

Several authors have surveyed adults with cerebral palsy and documented reports of chronic pain (Andersson & Mattsson, 2001; Cathels & Reddihough, 1993; Murphy, Molnar, & Lankasky, 1995; Turk, Geremski, Rosenbaum, & Weber, 1997). Andersson and Mattsson (2001) indicated that 78.7% of their 224 participants had musculoskeletal pain, with 18% reporting pain every day. Murphy et al. (1995) found 39% of the 67 previously ambulatory subjects in their survey stopped walking by choice before or at age 25. Thirty per cent of their sample had fractures, most of them in persons who were amputated. They documented 23% of the entire sample to have pain, with 44% of the non-ambulatory participants detailing chronic pain.

Turk et al. (1997) studied the health of 63 women living in the community and their health issues. Eighty-four percent reported pain associated with their cerebral palsy and 56% had enough pain to limit their life activities.

Cathels and Reddihough (1993) did not specify pain as a concern in their survey; however clinical evidence of painful conditions was noted. Arthritis was found in 27% of the 66 adults; 72% of the sample had orthopedic problems, such as dislocated hips, contractures, and significant foot deformities. Upper limb contractures existed in 38% of the sample.

**Assessment of satisfaction with life indicated only moderate levels of satisfaction in those persons who reported one or more pain sites.**

**SPECIFIC PAIN STUDIES**

A team of researchers carried out a series of studies specifically designated to document pain in adults with cerebral palsy (Engel, Jensen, Hoffman, & Kartin, 2003; Engel, Kartin, & Jensen, 2002; Engel, Schwartz, Jensen, & Johnson, 2000; Schwartz, Engel, & Jensen, 1999). In the first study (Schwartz et al., 1999), 93 adults with cerebral palsy were surveyed using several instruments to assess intensity and location of pain. The age range of subjects was 18-76 years, with a mean of 38 years. Eighty-four percent of the sample had quadriplegic involvement. Sixty-four percent of those studied reported chronic pain, with 56% reporting daily pain in the mild to moderate range. Sites of pain varied, with most reported in the lower extremities and back. Sources of relief for pain included exercise, stretching, resting, massage, sleeping and staying active. A correlation between increased age and increased pain was found, with a recommendation for further study to verify this information.

Engel et al. (2000) studied depression, coping strategies, pain intensity, and pain interference with activities in 50 participants from the original study. Participants were more likely to use the following coping strategies:

- Task persistence
- Diverting attention
- Reinterpreting pain sensation
- Praying/hoping.

Persons with cerebral palsy were significantly more likely to use these strategies than a comparison sample of persons with chronic pain who did not have cerebral palsy. More frequent use of coping strategies correlated with depressive symptoms and higher levels of pain interference with functional activities.

Engel et al. (2003) then studied another sample of 100 adults with cerebral palsy, 74% of whom had quadriplegic involvement. Sixty-seven per cent of this sample reported one or more chronic pain sites, most frequently in the low back, leg, and hip. Twenty-four per cent of the sample had constant pain. Assessment of satisfaction with life indicated only moderate levels of satisfaction in those persons who reported one or more pain sites.

Finally, Engel et al. (2002) surveyed 64 adults with cerebral palsy who had pain in order to describe common procedures used to address pain. Fifty-four per cent had chronic pain for which most of these participants used medications. A few had tried counseling, biofeedback, or exercise to address their pain as well as a range of other procedures, including botulinum toxin, implantable pump for morphine, massage, TENS units, nerve blocks, and so forth. The majority of participants did not see health care providers for the specific purpose of pain management.

While these studies are helpful in deter-
mining that pain is a consistent problem for adults with cerebral palsy, sources of pain are not specified. The following provides a broad view of possible sources of pain in adults.

**MUSCULOSKELETAL PAIN**

Much of the pain reported in the previous studies comes from the musculoskeletal system in persons with quadriplegic involvement. This is hardly surprising considering the number of orthopedic surgeries performed on children with cerebral palsy that are carried out in both soft tissue and bony structures. Long term postoperative follow-up on surgical procedures that include pain measures are not common, but a few studies do exist. Tenuta and associates (Tenuta, Shelton, & Miller, 1993) included pain measures in their assessment of 27 patients who had triple arthrodesis surgery in childhood. Forty per cent of subjects reported continuing problems with foot pain at a mean of 17 years 9 months after surgery.

Hodgkinson et al. (2001) assessed hip pain in adolescents and young adults who were non-ambulatory in a multi-site European study. Forty-seven percent of the sample had hip pain. Sixty-seven subjects had some degree of hip dislocation or subluxation, and 33 of those had pain. Other sources of pain included movement at the hip, weight bearing on the limb, extended periods sustained in one position or when position was changed, and spontaneous pain of unknown origin. Only 13.6% of all subjects had medical intervention for their pain, and in contrast to Schwartz et al. (1999), younger participants reported more pain than older persons.

Cooperman, Bartucci, Dietrick and Miller (1987) studied 38 previous patients with a total of 51 dislocated hips, 9 of which had been successfully reduced. The mean follow-up time was 18 years. Over half the patients reported hip pain.

While hip pain figures large in the literature, there is also a body of literature relating to incidence and surgical repair of cervical spondylitic myelopathy (Azuma et al., 2002; Harada et al., 1996; Onari et al., 2002). This condition occurs in adults with athetoid and dystonic cerebral palsy and causes neurologic deterioration with accompanying loss of muscle function. Harada et al. (1996) compared cervical spine radiographs of adults with athetosis to those of 417 typical adults. Adults with athetosis had disc degeneration at an earlier age with more significant deterioration than the control group. Advanced disc deterioration in those adults was eight times as likely to occur as in typical adults, often with narrowing of the cervical canal, particularly at C4 - C5.

Onari et al. (2002) recommended surgical repair using anterior-posterior fusion. Azuma et al. (2002) described follow-up of 10 patients a mean of 15 years after similar surgery. Although all patients improved initially, eight had later deterioration due to progression of disc disease. Although pain was not reported specifically in these manuscripts, anecdotal evidence from a number of patients indicates that disc degeneration and with subsequent herniation can be quite painful.

Osteoporosis and resulting fractures have been documented in severely affected persons with cerebral palsy (Bischof, Basu, & Pettifor, 2002; King, Levin, Schmidt, Ostreich, & Heubi, 2003; Lee & Lynne, 1990). Such fractures are another source of pain.

Although osteoporosis has been documented in persons who are severely affected, there have been virtually no studies regarding the effect of menopause on the occurrence of osteoporosis in women with cerebral palsy, an especially important area since so many adults who walked as children cease to do so in early adulthood, increasing the risk for osteoporosis (Bottos, Feliciangeli, Sciuto, Gericke & Vianello, 2001). Another factor in early-onset osteoporosis is the use of anti-epileptic drugs in adults with cerebral palsy, some of which have been noted to increase the risk of osteoporosis (Lloyd, Spector, & Howard, 2000).

Other sources of pain not well explored are nerve and connective tissue injuries. Alvarez, Larkin, and Roxborough (1982) described four cases of adults with athetoid cerebral palsy who had carpal tunnel syndrome delineated by nerve conduction studies and symptomatology. Murphy et al. (1995) documented hand parasthesias in median and ulnar nerves in 10% of their sample; 20% of those with such symptoms had dyskinetic cerebral palsy. Anecdotal reports of similar cases have been reported more recently (Denton, personal communication, February, 2002; Murphy, personal communication, September, 2003).

There have been other anecdotes regarding possible tears of the meniscus in ambulatory adults. A common complaint with these kinds of injuries is difficulty getting diagnosis and treatment – physicians attribute complaints of pain and discomfort to the primary diagnosis of cerebral palsy.

**POSITION CHANGE AND PAIN**

Hodgkinson et al. (2001) found pain resulted from staying in one position for extended periods of time. Vogtle, Morris and Denton (1997) used a twice weekly swimming intervention with six adults who lived in group homes. One finding was decreased pain in pre-intervention pain sites, although new sites of pain were noted in some participants post-intervention. While time in the pool was believed to be beneficial, another hypothesis relating to pain was that the change in position from being seated in wheelchairs to supine in the pool helped minimize pain. The clients in this study stayed in their wheelchairs from 6 in the morning until 6 or 7 in the evening except for toileting. Such extended sitting duration is very likely to result in pain, especially in adults with the severe impairments included in this sample.

Adults with quadriplegic cerebral palsy...
are often difficult to lift. Those who are employed and non-ambulatory may not have opportunities during their work-day to get out of their chairs other than for toileting. Obesity contributes to challenges in lifting. Cathels and Reddihough (1993) reported that 8% of their sample was obese. Rimmer, Braddock, and Fujiara (1993) indicated the incidence of obesity in persons with developmental disabilities, including cerebral palsy, is higher than in the typical population. Clients who are obese and cannot move themselves are likely moved less often, as has been the case with adults I see.

OTHER SOURCES OF PAIN

Adults with developmental disabilities report early loss of functional skills and deterioration in motor performance (Ando & Ueda, 2000; Connolly, 1998; Currie, Ger shkoff & Cifu, 1993; Lo Surdo, 1997). These changes, along with the advent of health conditions commonly seen with typical aging, appear to result in sources of pain that are not well studied, for example arthritis, urological problems and diabetes.

CONCLUSION

Studies seeking to describe pain in persons with cerebral palsy tell us that significant numbers of adults live with chronic pain.

Obviously we have much to learn. The purpose of this article is to prompt clinicians to reflect on pain concerns in adults and to keep this reflection in their minds when they consider treatment of children. Those children will become the adults of tomorrow—we need to consider how we can prevent them from living in pain as many adults with cerebral palsy currently do.

REFERENCES


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Help in Handwriting

WORDS FLOW EASILY WITH A COMPACT, PORTABLE WORD PROCESSOR

By Denise B. O’Toole, OTR/L

In my role as a school-based therapist, referrals for poor handwriting are common. A number of issues affect the outcome of such referrals, including the child’s age, any neuro-motor and/or sensory issues involved, and whatever functional requirements exist in the classroom.

Writing is an essential skill. A first-grader is still learning how to hold and control a pencil and to copy letters. By the fifth grade, the student is required to write a great deal to recall facts and support the development and creative exploration of his ideas.

A learning disability, poor motor planning, or cerebral palsy are all factors that can make handwriting a torturous and time-consuming experience. In such cases, it may be appropriate to recommend that the student word process his written work, bypassing the difficulties he may have with the physical act of writing. Access to a classroom computer may be helpful, but providing a portable word processor may be a less restrictive alternative.

I have worked with students using the AlphaSmart 3000. It is a reasonably priced compact portable word processor, weighing about two pounds, that operates for 700 (yes, hundred!) hours on three AAA batteries. Its sturdy shell stands up to student use, it doesn’t look “geeky,” and the keyboard size is comparable to that of a laptop computer. It can be kept in the desk and is retrieved as easily as a spiral notebook. The 100 pages of text it holds can be organized into eight separate files, which save automatically as the work is typed. I encourage my students to save all social studies assignments in one file, science in another, and so on. No files are deleted without going through a two-step process, (including answering “Yes” to “Clear file?”) which helps dodge homework-eating dogs.

Once the work is typed, it can be uploaded to a computer (AlphaSmart works with both Mac and Windows platforms) with one keystroke or sent directly to a compatible printer. It interfaces through USB or infrared.

The only drawback is the size of the screen: only four lines of text are visible at a time, which can present a problem for students with visual impairments.

A student whose handwriting is poor enough to warrant this accommodation is probably not going to be a touch-typist in the beginning. If you recommend an AlphaSmart 3000, you will most likely also propose spending time on a keyboarding program. No matter what program you choose, almost every student does require some keyboard supervision. The OT needn’t sit and supervise keyboarding practice, but unless he’s very motivated, Johnny is going to aim for a high score on the keyboarding program, and he won’t care what fingers he uses as long as he can blast the asteroids. Someone needs to monitor correct fingering as he practices and not just check his score every session. Inadequate keyboarding skills can sabotage an otherwise effective accommodation, so you want to be sure not to overlook this detail.

HELP WITH WORD RECOGNITION

For the student who has difficulty spelling but who can recognize the word when he sees or hears it, a word-prediction computer program such as Co:Writer, may be helpful. As the first letter of a word is typed, a list of words is presented from which one can be selected with a mouse click or a keystroke. Co:Writer will read the word and the sentence aloud, and this auditory feedback can help the student become more independent in his writing.

Selecting one of the offered words drastically reduces the number of keystrokes required to complete a sentence, which can make an enormous difference to a student with motor difficulties. In the full version of the application, which runs on a standard computer, colors of both the background and the text can be selected, allowing visually-impaired and learning-disabled students to set up a window that meets their needs for visual contrast.

The AlphaSmart runs a smaller version of Co:Writer: It doesn’t offer color choices or auditory feedback, and because of the window size, it looks and operates a little differently than it does on a computer.

The AlphaSmart 3000 is a versatile “medium-tech” tool that allows the student both easy access to word processing and the support of word-prediction software without being tied to a desktop computer. For children with disabilities, it helps make the words flow more easily.
Neonatal Pain: Fallacies and Facts

By Carrie Dendtler, PT

Pre-term and full-term infants in the neonatal intensive care environment often experience multiple medical procedures that involve noxious stimuli. Common procedures may include repeated heel sticks, intubation, endotracheal suctioning, arterial and venous punctures, lumbar punctures, surgery, fracture reduction, catheter insertion, and circumcision.

At one time, medical professionals did not believe neonates experienced pain due to an underdeveloped nervous system (Abu-Saad, Bours, et al, 1998), or they believed any pain experienced would be felt less acutely than an adult would feel pain. Many professionals also believed that infants could not remember painful stimuli as they matured (Abu-Saad, Bours, et al, 1998).

Today, we know the fallacy of this position. We now know the anatomic, hormonal, and neuroendocrine functions for transmission of pain are present in the neonatal population. For example, the somatosensory pathways that carry the perception of pain are certainly developed prior to birth and pre-term infants born before 37-weeks gestational age may be even more sensitive to pain than term neonates (Pasero, 2002).

According to one study cited in the 2000 American Academy of Pediatrics policy statement on pain in the neonate, while the mechanisms by which neonates remember pain are not well understood yet, studies have shown that neonates who were exposed to noxious stimuli at 28 to 32 weeks post-conceptual age showed different behavioral and physiologic responses compared to neonates of similar age who had not had such experiences.

Physiologic and behavioral state changes occur in response to painful procedures. Immediate physiologic responses to pain affect all major organ systems and include: reduced pulmonary tidal volume and vital lung capacity, increased respiratory rate, possible hypoxemia, increased cardiac demands with resultant changes in blood pressure, changes in skin color, temperature regulation difficulties, and predisposition of the brain to intraventricular hemorrhage.

The long-term effects of unmitigated pain include alterations in cerebral neuroanatomy and alteration in the threshold response to painful stimuli. (American Academy Of Pediatrics, 2000; Abu-Saad, 1998)

ASSESSING NEONATAL PAIN

Neonatal pain is now considered an important area of assessment and treatment. The Joint Commission on Accreditation of Healthcare Organizations requires that pain be assessed and treated in all patients, including neonates. According to “Prevention and Management of Pain and Stress in the Neonate,” a year 2000 policy statement of the American Academy of Pediatrics, neonates who are preterm to one month of age rely upon health care professionals to recognize pain behaviors and provide effective and safe interventions to relieve pain and stress.

NDT clinicians who treat infants within the neonatal intensive care setting are in a unique position to assess and provide neuro-developmental strategies to decrease overstimulation, stress, and pain.

A 1998 study from Seminars in Perinatology counted 16 scales to assess neonatal pain (Abu-Saad, Bours, et al). However, many of these scales did not have reported reliability or validity data, and many were not being used within a clinical setting. Several of the most researched pain scales, and ones mentioned within the American Academy of Pediatrics policy statement, include the Premature Infant Pain Profile (PIPP), the CRIES scale, and the Neonatal Infant Pain Scale (NIPS).

PIPP

To provide a composite pain score, the Premature Infant Pain Profile (Ballantyne, Stevens, et al, 1996) uses facial actions (brow bulge, eye squeeze, and naso-labial furrow), physiological indicators such as heart rate and oxygen saturation levels along with gestational age, and the neonate’s state of behavior. The maximum score is 21 for younger infants and 18 for older infants. A score of 6 or less generally indicates no pain, while scores greater than 12 indicate moderate to severe pain. The PIPP has demonstrated excellent inter and intra-reliability within clinical settings (Blauer, Gerstmann, 1997; Ballantyne, Stevens, 1998).

CRIES

The CRIES (Ketchner, Bildner 1995) scale is based upon assessment of the infant’s cry and whether the infant requires supplemental oxygen in order to maintain appropriate saturation levels, increased heart rate and blood pressure, facial expression, and sleeplessness. The CRIES scale uses a 10-point scale similar to the APGAR score an infant receives when first born (Blauer, Gerstmann, 1997).

NIPS

The Neonatal Infant Pain Scale (Lawrence, Alcock, et al, 1993) assesses facial expression, cry, breathing patterns, movement of arms and legs, and state of arousal. The NIPS can be scored at one-minute intervals before, during, and after painful procedures. The total score for a one-minute block can be anywhere from zero to seven as a maximum (Blauer, Gerstmann, 1997).

Several articles reviewed have pointed out the paucity of pain scales available for infants who are ventilated, critically or chronically ill, and who are low birth weight...
NEONATAL PAIN

(Blauer, Gerstmann, 1997, 2000 American Academy of Pediatrics policy statement, Stevens, Johnston, Franck, et al, 1999). This is of obvious concern as infants who are low birth weight and ventilated are most likely to undergo painful procedures and are most vulnerable to the effects of noxious stimuli.

NDT clinicians can assist infants with non-pharmacologic interventions in order to lessen the effects of stressful and painful stimuli. Assisting a caregiver in identifying an infant’s particular signs of stress and effective developmentally supportive interventions is part of formulating a specific treatment plan in a holistic manner.

PAIN INTERVENTION

Ways to support an infant in pain or distress may include avoidance or limitation of noxious stimuli, containment (encasement of the infant’s head and upper back, soles of feet and lower extremities by the therapist’s hands in order to decrease motor activity and encourage self-calming), positioning, nonnutritive sucking on a pacifier, and oral administration of sucrose.

Many nurseries attempt to cluster routine care and decrease environmental stimuli in order to limit exposure to noxious and stressful stimuli. Family members can be taught how to recognize their own infant’s specific triggers to stress and related reactions, and effective means of calming their infant. A 2001 study has shown that caregiver responsiveness during painful or stressful situations, especially when combined with one or more of the interventions below, provides a cumulative effect in decreasing physiologic stress (Gormally, Barr, et al, 2001).

Containment and positioning through swaddling or nestling with the limbs close to the trunk has been shown to facilitate infants’ attempts to calm themselves and regulate their own behavior (Stevens, Johnston, Franck, et al, 1999). Swaddling combined with rocking or water beds has also been shown to promote physiologic stability. However, these measures have not been widely seen as a way to control responses to painful stimuli (Stevens, Johnston, Franck, et al, 1999, Grunau, Linhares, et al, 2004). Several studies did show a facilitated tucking of an infant’s extremities into flexion during a heelstick procedure and endotracheal suctioning, respectively, resulted in less crying time and a decreased PIPP score after the procedure ended (Ward-Larsen, Horn, Gossell, 2004, Stevens, Johnston, Franck, 1999).

Nonnutritive sucking with and without sucrose has been the most frequently studied nonpharmacologic intervention studied for pain relief in neonates (Stevens, Johnston, Franck, 1999). Nonnutritive sucking alone, without sucrose, reduces heart rate and metabolic rates, promotes self-regulatory behavior, and elevates the pain threshold (Stevens, Johnston, Franck, et al, 1999). Studies have shown sucrose administered orally prior to painful procedures has decreased cry duration, heart rate, facial expression of pain, and composite pain scale scores. A 1997 meta-analysis of studies showed that two milliliters of sucrose administered two minutes prior to the painful stimuli was most effective for analgesic effect (Stevens, et al 1997).

Research on volume and dose-response effects of sucrose has been inconclusive so far, although at least one older study suggests the incidence of necrotizing enterocolitis (NEC) may be higher in very low birthweight infants who received frequent small volumes of a 20 percent sucrose solution (Willis, Chabot, Radde, Chance, 1977).

Additional research into the most effective methods to reduce physiologic pain responses in neonates holds great promise for furthering the NDT pediatric community’s understanding of developmentally supportive care and intervention as we continue to assess and treat the whole child.

REFERENCES


I have a patient with Central Pain Syndrome. What is your experience with the efficacy of treatment for reducing pain in adult hemiplegia and how can I help him maintain flexibility?

In 20 years of working with patients with adult hemiplegia, I had little exposure to Central Pain Syndrome (CPS) until recently, when I received several referrals of people with thalamic pain (the other name by which CPS is known).

I researched information on CPS, but with little success, so I’ve had to develop my own approach to treatment. I use NDT principles for the motor impairments and look for ways in which I can reduce the pain.

CPS is pain that develops in a small population after a cerebral vascular accident (CVA) in the thalamic region and is considered similar to phantom pain. It appears to occur due to misinterpretation of some or all of the sensory messages passing through the thalamus. The pain appears to have either a gradual or sudden onset, and starts within the first few months of the recovery process. It gradually and continuously increases with time and is unrelenting. In addition to continuous pain, there are jolts of pain that radiate throughout the whole or parts of the more affected side (including the trunk).

Many patients with persistent thalamic pain lose flexibility and deteriorate in function due to depression. My research indicated that the long-term prognosis for people with CPS caused by a thalamic stroke is poor, with suicide being a frequent outcome.

My observation of the effects of treatment varied in different clients. In most people the motor impairments responded quickly to treatment (more quickly and completely than in most of the clients I had seen with other types of brain lesion), but returned as the pain levels increased. In a few people, the pain level reduced extremely well and eventually resolved entirely once more normal movement was recovered. One woman whose motor impairments resolved with treatment was left with symptoms of paresthesia and tingling. These disappeared with frequent rubbing of her more affected side with towels, hand lotion, etc.

On the other hand, two years ago I worked with a man whose pain did not resolve as his motor performance improved. He presented initially with generally poor posture (which existed prior to the stroke), poor gait due to a combination of weakness and incoordination of muscle action, and extremely cold feet due to poor circulation. Following a period of therapy his posture improved, his gait pattern appeared close to normal, he no longer had cold feet, and he was independent in activities of daily living.

However, his pain persisted and increased and is now his primary impairment. It has become so severe that he is losing the gains he made initially. His motor performance is deteriorating due to inactivity caused by depression and the effects of strong pain medication. So far, no medication has been found that successfully reduces the pain.

This client’s pain is increased by a number of factors, such as changing emotions (joy, sadness, surprise, etc.) and by the vibration experienced when riding in a vehicle. The noise of the vehicle engine also increases pain. Attempts have been made to moderate factors that increase pain, with some success.

Two months ago I began to see another client with CPS whose CVA occurred six years ago. She has many motor impairments. I hope that by resolving some of her impairments and by providing appropriate types of sensory input to the more affected side, the pain level may subside. After two visits she has made some significant changes in the quality and variety of functional movement patterns.

Although clients with CPS need multiple options for maintaining strength and flexibility, it is important to teach the client to regulate activities in accordance with the pain levels, so the pain does not become exaggerated. All the following activities contribute to maintaining independence:

- Stretching for every joint of the body, not just the few tight areas so that they maintain flexibility
- A general strengthening program which may include the gym equipment
- A supine program in preparation for when other programs become too painful
- Aerobic workouts (pool, stationary bike or walking etc)
- Balancing activities in sitting and standing
- A program to reduce abnormal responses to different types of sensory input (e.g. pain in response to vibration from a vehicle)
- Functional activities (possibly including walking or hiking)
- Exercises using specific components of functional activities to gain functional strength (e.g. shoulder flexion with elbow extension movements to maintain forward reach)

In working with these clients, I’ve learned some helpful techniques. I try to:

- Suggest and not cajole.
- Guide the client to an appropriate choice, (e.g. to exercise to prevent deterioration and to avoid situations that increase pain).
- Accept the client’s decision, if it differs from mine, as final.
- Get the client to the highest possible level early, before the pain becomes too severe for major changes.

(continued on page 21)
Therapists Rely On Our Eating Aids

**Flexi Cut Cup**
Flexible translucent plastic cut cups designed to promote drinking without neck extension. Dishwasher safe, 3 sizes. No Latex.

**Maroon Spoon**
Narrow, shallow bowl makes them ideal for feeding therapy. Tough, break resistant plastic is dishwasher safe, 2 sizes. No Latex.

**Soft Touch Spoons**
Super-soft 100% silicone is easy on gums and teeth. One-piece design has a nicely shaped bowl that is not too deep and a comfortably shaped handle. Assorted colors. No Latex.

Call for our free catalog & be sure to check the sale page on our website too!
basis for future pain assessments. For clinicians dealing with children who experience pain, this tool may provide a quantifiable measure to use for assessment and to gauge the effectiveness of interventions to increase function.

Carrie Dentler, PT, is physical therapist in the Special Care Nurseries and Outpatient Lactation Program at Northside Hospital in Atlanta, Georgia. She can be reached at cdentler@mindspring.com.


Carrie Dentler, PT, is physical therapist in the Special Care Nurseries and Outpatient Lactation Program at Northside Hospital in Atlanta, Georgia. She can be reached at cdentler@mindspring.com.

NDT was useful in resolving the motor impairments, and in some instances the pain subsided when motor function improved. In other people the pain did not subside. Additional understanding of the sensory impairments is needed in order to find appropriate strategies to reduce the intractable pain that is such a serious problem for people with CPS.

Trish Sudell-Moratorio is a certified NDTA PT Instructor in adult hemiplegia, in practice in California. She has a strong interest in further developing treatment to assist clients with CPS, and would be pleased to hear from others who have experience in this area. She is available at NeurAble@earthlink.net.
### Upcoming NDTA Inc. Approved Courses

**NDT/BOBATH CERTIFICATE COURSE IN THE TREATMENT AND MANAGEMENT OF ADULTS WITH HEMIPLEGIA**

**Course #: 04A116**  
**Dates:** 8/6/2004–8/17/2004  
**Location:** San Jose CA  
**Instructors:** Cathy Runyan, OT, CI  
Bonnie Jenkins-Close, PT, CI  
Karen Brunton, PT, CI  
Trish Moratorio, PT  
**Contact:** Recovering Function  
408-268-3691  
info@recoveringfunction.com

**Course #: 04A117**  
**Location:** Kitchener, Ontario, Canada  
**Instructors:** Karen Brunton, CI, PT  
Cathy Hazzard, PT  
**Contact:** Karen Guha, Grand River Hospital Freeport Site Outpatient Rehab  
PO Box 9056  
Kitchener, Ontario, N2G 1G3 Canada  
519-749-4300 x7488  
karen.guha@grhosp.on.ca

**Course #: 04A118**  
**Dates:** 10/18/2004–10/29/2004  
**Location:** Calgary, Alberta, Canada  
**Instructors:** Cathy Hazzard, CI, PT  
Karen Brunton, PT  
**Contact:** Jason Knox  
Rehab for the Future  
403-944-4255  
403-270-8215 Fax  
rehabforthefuture@hotmail.com

**NDT/BOBATH CERTIFICATE COURSE IN THE TREATMENT AND MANAGEMENT OF INDIVIDUALS WITH CEREBRAL PALSY**

**Course #: 04A119**  
**Dates:** 10/18/2004–11/5/2004  
**Location:** Milwaukee, WI  
**Instructors:** Monica Diamond, MS, PT  
Tom Diamond, MS, PT  
**Contact:** UWM College of Health Sciences Outreach Office  
Enderis Hall Room 995  
PO Box 413, Milwaukee, WI 53201  
414-229-6964  
414-229-5100 Fax  
chs-outreach@uwm.edu

**Course #: 04A120**  
**Dates:** 7/21/2005–7/24/2005  
8/18/2005–8/21/2005  
9/15/2005–9/18/2005  
10/13/2005–10/16/2005  
**Location:** Asheville, NC  
**Instructors:** Kay Folmar, PT, CI  
Cathy Hazzard, PT, CI  
**Contact:** Ron H切chtstetter  
828-274-9567 x4225  
rhochstetter@carepartners.org

**Course #: 05A101**  
**Dates:** 3/19/2005–3/23/2005  
7/27/2005–7/30/2005  
8/10/2005–8/13/2005  
**Location:** Houston, TX  
**Instructors:** Sherry Lynn Wilson Arndt, PT, MA, PCS  
Lezlie Adler OT/R, MS  
Marybeth Trapani-Hanasewych MS SLP/CCC  
**Contact:** Mitzi Wiggin  
Texas Children's Hospital  
832-826-6107  
832-825-5242 Fax  
mmwiggin@texaschildrenshospital.org

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**Educational Opportunities**

EDUCATIONAL OPPORTUNITIES

22 • NDTA NETWORK • JULY/AUGUST 2004 • PAIN MANAGEMENT
## Upcoming NDTA Inc. Approved Courses

### NDT/BOBATH APPROVED ADVANCED COURSES
**REQUIRING THE SUCCESSFUL COMPLETION OF AN NDT BASIC COURSE**

<table>
<thead>
<tr>
<th>Course #: 04H114</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Advanced Handling and Problem Solving Course</td>
</tr>
<tr>
<td><strong>Dates:</strong> 11/8/2004–11/12/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Hong Kong</td>
</tr>
<tr>
<td><strong>Instructors:</strong> Teddy Parkinson, Kay Folmar</td>
</tr>
<tr>
<td><strong>Contact:</strong> Cecilia Lam, Rehabaid Centre G/F Core S The Hong Kong Polytechnic University Hunghom, Kowloon, Hong Kong <a href="mailto:rehabaid@netvigator.com">rehabaid@netvigator.com</a></td>
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<tr>
<th>Course #: 04U113</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Advanced Upper Extremity Course</td>
</tr>
<tr>
<td><strong>Dates:</strong> 9/19/2004–9/23/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Toronto, Ontario, Canada</td>
</tr>
<tr>
<td><strong>Instructors:</strong> Karen Brunton, CI, PT, Pat Bonner, OT</td>
</tr>
<tr>
<td><strong>Contact:</strong> Judy Ward Toronto Rehab Institute-Conference Services 550 University Ave., Toronto, Ontario M5G 2A2 Canada 416-597-3422 x 3516 • 416-597-6202 Fax <a href="mailto:conferences@torontorehab.on.ca">conferences@torontorehab.on.ca</a></td>
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<tr>
<th>Course #: 04Y101</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Advanced Baby Course</td>
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<tr>
<td><strong>Dates:</strong> 8/16/2004–9/2/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Orange, CA</td>
</tr>
<tr>
<td><strong>Instructors:</strong> Lois Bly, Lauren Beeler, Mary Hallway</td>
</tr>
<tr>
<td><strong>Contact:</strong> Barbara Sargent Children's Hospital of Orange County 455 South Main Street, Orange, CA 92868 714-516-4265 • 714-516-4271 Fax <a href="mailto:bsargent@choc.org">bsargent@choc.org</a></td>
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<th>Course #: 04Y115</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Advanced Baby Course</td>
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<tr>
<td><strong>Dates:</strong> 10/4/2004–10/15/2004</td>
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<tr>
<td><strong>Location:</strong> Islip, NY</td>
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<tr>
<td><strong>Instructors:</strong> Susan Breznak-Honeychurch, CI, PT Rona Alexander, PhD, CCC-SLP Bonnie Boenig, MeD, OTR</td>
</tr>
<tr>
<td><strong>Contact:</strong> New Directions Child &amp; Family Associates 710 Central Avenue, Dunkirk, NY 14048 716-366-2944 • 716-366-1667</td>
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### Educational Opportunities

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<tr>
<th>Course #: 04N104</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> NDT Concepts Applied to Orthotic Fabrication (Requires Successful Completion of an NDT Basic Course)</td>
</tr>
<tr>
<td><strong>Dates:</strong> 10/15/2004–10/18/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Columbus, OH</td>
</tr>
<tr>
<td><strong>Instructors:</strong> Nicky Schmidt, PT, Debbie Merritt Plescia, CPO</td>
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<tr>
<td><strong>Contact:</strong> David Rupp • 614-566-0562</td>
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<tr>
<th>Course #: 04N105</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Assistive Technology Strategies: A New Perspective in Enhancing Function</td>
</tr>
<tr>
<td><strong>Location:</strong> Lisle, IL</td>
</tr>
<tr>
<td><strong>Instructors:</strong> Gail Ritchie, OTR/L, Anne Heavey, SLP</td>
</tr>
<tr>
<td><strong>Contact:</strong> Dania Polly, Rainbow Center • 630-898-2200</td>
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<tr>
<th>Course #: 04N106</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Part 1: Developmental and Closed–Chain Biomechanics: Orthotic Selection Rehab Using Tape and Theratogs</td>
</tr>
<tr>
<td><strong>Dates:</strong> 9/4/2004–9/10/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Fresno, CA</td>
</tr>
<tr>
<td><strong>Instructor:</strong> Beverly Cusick</td>
</tr>
<tr>
<td><strong>Contact:</strong> Steve Davison • 559-449-0320 <a href="mailto:stevedavisonpt@yahoo.com">stevedavisonpt@yahoo.com</a></td>
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<tr>
<th>Course #: 04N107</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong> Part 2: Practicum Sessions in Below–Knee Serial Casting and Splint Fabrication Techniques</td>
</tr>
<tr>
<td><strong>Dates:</strong> 9/11/2004–9/12/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Fresno, CA</td>
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<tr>
<td><strong>Instructor:</strong> Beverly Cusick</td>
</tr>
<tr>
<td><strong>Contact:</strong> Steve Davison • 559-449-0320 <a href="mailto:stevedavisonpt@yahoo.com">stevedavisonpt@yahoo.com</a></td>
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<tr>
<th>Course #: 04N109</th>
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<tr>
<td><strong>Course Title:</strong> Using Taping During Treatment With Children With Neuromotor Impairments</td>
</tr>
<tr>
<td><strong>Dates:</strong> 8/20/2004–8/21/2004</td>
</tr>
<tr>
<td><strong>Location:</strong> Allentown, PA</td>
</tr>
<tr>
<td><strong>Instructor:</strong> Judith Bierman, PT</td>
</tr>
<tr>
<td><strong>Contact:</strong> Cindy Miles &amp; Associates 3721 Crescent Court West Whitehall PA 610-820-7667 • 610-820-7671 Fax • <a href="http://www.cindymiles.com">www.cindymiles.com</a></td>
</tr>
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Our Mission

The Neuro-Developmental Treatment Association (NDTA) is a nonprofit professional organization of physical therapists, occupational therapists, and speech-language pathologists who are devoted to promoting the theory and principles of the Neuro-Developmental Treatment approach. The NDTA furthers the development of this unique approach by offering continuing education to the membership, providing educational services to the community, supporting clinical research, and promoting client and family advocacy. How may we help you? Contact NDTA at 800/869-9295 or visit www.ndta.org for more information.