What do students of a grade four class in Vancouver, B.C. have in common with a group of Alzheimer's patients in Hanover, Germany? The answer - Brain Gym®; or, the application of natural movement exercises (i.e., educational kinesiology) that enables them to access areas in the brain that were previously unavailable.

By Irene Barnes

Enhancing cognitive performance in dementia care

Using Brain Gym® exercises to access and enhance cognitive performance

Brain Gym® is a program of exercises that focus on the performing of specific physical activities that activate the brain, thereby enhancing cognitive performance and making it more receptive to learning.

This 'whole' brain learning through movement enables people to access areas in their brain that were previously unavailable to them. When these exercises are used with people with Alzheimer's disease, as the research study on page 36 demonstrates, they have been shown to maintain - even enhance - cognitive performance. **(See "Effect of Brain Gym®) exercises on cognitive performance in AD patients").**

Lost skills

Advances in technology, especially in brain imaging, have provided new insight into the changes that occur in the brains of people with dementia.

In Alzheimer's type dementia, it is known that cells in the hippocampus die, resulting in the inability to learn new information, or retrieve past information. Also, people who have suffered cerebral accident or stroke have been shown on brain scans to have cell death. The skills that were associated with the activity of these brain cells have been lost. However, the more connections between the brain cells and lobes of the brain, the better chance of regaining or relearning lost skills **(Goldman, et al., 1999).**

Rehabilitation

Recovery from a cerebral accident involves other brain cells taking over the function of the lost or dead cells. Researchers, therefore, advocate the cultivation or accumulation of neural connections and receptors; in other words, the development of our "mental muscles" **(Goldman, et al., 1999).**

Andreasen **(2001)** states that approximately 40% of people whose educational level is low are at risk of developing dementia by age seventy; this risk is only 10% for those with a higher educational level (i.e., college, university).

Of course, education probably doesn't tell the complete story, since those who are more highly educated also enjoy other advantages, such as more financial resources, which allows them to eat better, obtain better medical care, and enjoy more exercise opportunities **(Andreasen, 2001).**

Brain strengthening

Andreasen goes on to say that whatever our educational level in the past, we can all do something to reduce the risk of dementia in the present and future. Not only can we

Retrogenesis

A brave new world for Alzheimer's care

"Cognition and functioning are linked in the same qualitative and quantitative relationship in dementia as they are in normal development." This relationship to the progression of Alzheimer's disease Reisberg and colleagues call "retrogenesis," **(Reisberg, et al., 2002)**.

For the young shall inherit the earth

Just as a child passes landmarks in normal human development, the person with Alzheimer's develops the same landmarks in the corresponding stages in reverse order.

"An understanding of [this] retrogenesis provides a basis for more sophisticated principles of care" **(Ibid., 2002)**.

This new science of Alzheimer's care has been formulated into axioms (or self-evident postulations). In the context of Alzheimer's care, these axioms refer to self-evident basic needs and desires applicable to all ages, and which, as postulates, are hypothetically testable when Alzheimer's care is being administered.

Treatment, utilizing these postulates, "is dependent on the axioms, and "caveats," which are exceptions to the developmental ages-retrogenesis model, based on the nature of human aging and Alzheimer's disease" **(Ibid., 2002)**.

For example, Axiom IX states: "All human beings have the need for physical movement." This fundamental need, according to the authors, is frequently ignored or not recognized in Alzheimer's disease patients to such an extent that, until recently, Alzheimer's disease patients were routinely restrained in order to prevent falling.

"Restraint actually increased falls (in AD) patients, who were made increasingly unstable from the restraints. Hence, the need for movement remains frequently unrecognized in the Alzheimer's disease patient" **(Ibid., 2002)**.

Developmental ages

Postulate II states that the kinds of activities enjoyed by an Alzheimer's patient, at a particular developmental age of the disease, are mirrored by the kinds of activities enjoyed by children at a corresponding developmental age. In other words, "the kinds of activities that promote healthy and optimal motor development in children are similarly the kinds of activities which minimize motor degeneration in AD" **(Ibid., 2002)**.

Since brain-strengthening exercises have been proven so effective with children, the probability of these exercises aiding people with Alzheimer's disease is encouraging. ■

Reference: Reisberg, B., Franssen, E., Souren, L., Auer, S., Akram, I. and Kenowsky, S., Evidence and mechanisms of retrogenesis in Alzheimer's and other dementias: management and treatment import, *American Journal of Alzheimer's Disease and other Dementias*; 17(4); p.202-212; July/August, 2002.

improve our physical lifestyle, but we can also "improve mental hygiene by exercising or strengthening our brains" **(Andreasen, 2001).**

Most have heard of brain strengthening exercises, such as activities to improve the functioning of the left-brain by working crossword puzzles, and our right-brain with jigsaw puzzles. "Reading new books, learning new skills, such as using computers, speaking a foreign language, or taking on a new hobby that exercises the mind and makes it solve new problems, or see things in new ways," helps both sides of the brain **(Ibid., 2001)**.

As it progresses, people with Alzheimer's disease tend to have increasing problems with perception and motor co-ordination. Certain of the movement deficits common in Alzheimer's disease impede learning. Similar deficits are also seen in children with learning problems. These same deficits correspond in severity to the progress of the illness in AD patients. **(See side-bar on "Retrogenesis).**

Alzheimer's patients who are no longer capable of reading or writing also have difficulty in crossing their own mid-line visually and kinesthetically; very often they are only able to carry out one-sided movements.

Educational kinesiology

It has been demonstrated that movements from educational kinesiology (or Edu-K) used in training sessions enhance brain function as well as increase body awareness. **(See side-bar on Edu-K and Brain Gym®) Exercises).**

The effectiveness of these exercises in enabling and enhancing learning ability in children has been demonstrated. In one example, a grade four class in Vancouver, B.C., after doing ten minutes of Brain Gym® exercises every day, improved their learning by 25 per cent **(Teplitz and Eckroate, 1994)**.

Brain Gym® exercises are designed to develop the brain's neural pathways the way nature does: through movement. It is said to work by facilitating the optimal achievement of mental potential through specific movement experiences. All acts of speech, hearing, vision, and co-ordination are learned through a repertoire of movements.

Brain Gym® exercises

Starting on page 38, a number of Brain Gym® exercises (or movements) are described. The impact of each exercise on the brain is explained, as are the benefits of the exercise to the individual.

The purpose of these exercises is to promote efficient communication among the many nerve cells and functional centres located in the brain and sensory motor system. ■

(See references next page)

Edu-K and Brain Gym® Exercises

Kinesiology is the science or study of body movement. *Educational Kinesiology* (or Edu-K) is the study and application of natural movement experiences to facilitate learning. It focuses on the performance of specific physical activities that activate the brain for optimal storage and retrieval of information.

Edu-K is a process for re-educating the mind/body system for accomplishing any skill or function with greater ease and efficiency.

Brain Gym® is the core program of educational kinesiology. It is the registered trademark for an educational kinesiology program based on the research of Dr. Paul Dennison, a remedial educational specialist.

When Dr. Dennison and colleagues developed the program, they worked on the premise that co-ordinated physical movement is necessary in brain development. Young children naturally perform, what experts in early childhood education call *developmental movements*. These movements develop neural connections and receptors in the brain, and are essential to learning.

Dr. Dennison discovered ways to adapt and sequence these movements so they would be effective for older children and adults, including the elderly. The result is a system of targeted activities with the capability of enhancing performance in all areas: intellectual, creative, athletic and interpersonal.

Dimensions of function

Brain Gym® works on the brain function in terms of three dimensions:

1. Laterality
2. Focus
3. Centering

Laterality pertains to the relationship between the two sides (or cerebral hemispheres) of the brain - especially in the **mid-field** - where the two hemispheres must integrate or co-ordinate their functions **(See "A comparison of left brain - right brain characteristics").**

The two sides of the brain are essential for reading, writing, listening and speaking (communicating). This co-ordinating relationship is also essential for fluid, whole body movement, and for the ability to move and think at the same time.

The ***focus dimension*** describes the relationship between the back and the front areas or lobes of the brain. Focus affects comprehension, or the ability to act on the details of a situation while keeping a perspective of the self, and to understand new information in terms of all previous experience. People deprived of this skill are said to have attention deficit disorder - the inability to focus or comprehend.

The ***centering dimension*** concerns the connection between the top and bottom structures of the brain. Centering enables us to harmonize emotion with rational thought, or our feelings with the expression of emotion. Stress and anxiety can disturb this dimension.

The movements or exercises in the Brain Gym® program interconnect the brain in these dimensions, allowing one to more easily learn through all the senses, to remember what is learned, and to participate more fully in the events of life.

Learning deficits

Dr. Dennison found that the deficits to learning were in the physical/perceptual abilities. Spacial awareness, a concept of wholeness and closure, the ability to focus attention and perceive an organization or structure, are requisite learning skills easily taught to normally functioning people. It is these same skills that the AD patient gradually loses.

Dr. Dennison discovered that these skills depend on an innate understanding of our bodies and how they move in space. Children, for example, only repeat those movements that are comfortable or familiar.

Although the Brain Gym® program was originally designed for kindergarten through college level, it is now being used with the elderly, and for diseases that have an affect on learning/relearning abilities, memory and related deficits; i.e., cerebral accident, Parkinson's, MS, autism, dyslexia, etc.

A number of programs have shown Brain Gym's effectiveness in helping older learners, including those with Alzheimer's disease, to enhance and retrieve physical and mental skills. **(See next page on Brain Gym® applied).** ■

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The effect of Brain Gym® exercises on cognitive performance in Alzheimer's patients

A study took place at the Clinic for Neurology and Medical Rehabilitation and Geriatrics in Hanover, Germany. The objective: to determine if the Brain Gym® exercise program was capable of allowing Alzheimer's patients to improve cognitive performance.

In order to determine the effectiveness of the Brain Gym® activities on cognitive processes, 24 Alzheimer's patients were tested (14 male and 10 female) between the ages of 51 and 81.

The 24 subjects were in varying stages of AD: eight were in the initial stage, ten were in a progressed stage, and six were already in advanced stages.

The test, approximately 10 minutes in duration, was done prior to the Brain Gym® exercises, and then repeated after the exercises. The exercises, lasting 45 minutes, were familiar to the test subjects who, in turn, were familiar with the facilitator, and with the room.

The same group of persons that underwent the testing before and after the Brain Gym® exercises were tested anew as a control group; only this time, testing took place at least one week after the exercises were given; no exercises were carried out for the control group in the interim.

The test with the control group was carried out to verify whether any potential performance increase after Brain Gym® exercises was truly related to the effectiveness of the exercises, or simply related to the repetition of test exercises after a short span of time.

Results

Of the 24 test subjects, 16 showed better performance after having done the Brain Gym® exercises.

Taking the number of points achieved in the first test run as a basis, the sum of points achieved in the second test run, and after the use of the Brain Gym exercises, was 23% higher. **(See table)**

Among the individual tasks, the highest growth was task #5 (the repeated word list) at 79%.

The second highest growth occurred in task #3 (shopping) at 21%, followed by task #2 (conversion of numbers) at 18%. For task #1 (word lists), the increase was 13%. Only task #4 (recalling a sequence of numbers) had nearly the same result (an increase of 1%).

When the tests were carried out with the control group, the increase of points overall was only 3% (compared to 23% following Brain Gym® input.

In taking into account the broad variation of results, the researchers considered this a negligible number.

In the control test run, the highest gain was for task #5 (repeated word lists) at 39%. Here it seems clear that remembering words read out twice in ten minutes is probably easier than when the list of words had been heard and tested one hour before.

Nevertheless, the increase of 79% after Brain Gym® suggests the exercises are particularly effective here.

The increase of 21% for task #3 (shopping) compares with a deficit of 1% in the control group. This suggests that spontaneous remembering and naming of everyday things is achieved in a better manner after Brain Gym® exercises,

The increase of 18% achieved in task #2 (number conversion) after Brain Gym® is in contrast to the increase of only 8% in the controls - again a better result with the help of the Brain Gym®.

In task #1 (word lists), there is no major difference between the test after Brain Gym® at 13%, and the second test run for the control group at 9%.

There is a noticeable difference for task #4 (recalling numbers in reverse). The test run after Brain Gym® saw a minor increase of 1%, whereas, the control group incurred a deficit of -11%.

This study illustrates that Brain Gym® exercises do contribute to a better access of performance potential in Alzheimer's patients.

Also, the study provides evidence showing that movement exercises (educational kinesiology) do not have the same effects on all AD patients.

Compared to the first test run, six showed the same results. In relation to the control group, however, the generally positive effect of movement exercises becomes clear: as compared to the first test run, ten tested persons showed worse results in the second test run of the control group. Clearly, concentration seemed to have decreased.

In the second test run of the control group, 11 persons had better results than in the first test run, while three had unchanging results. This can possibly be attributed to the relatively short-term repetition of the tasks.

Furthermore, the rather sudden day-to-day changes that AD patients experience have to be considered. AD patients are often subject to strong behavioural changes, and this creates a particular difficulty in judging the performance of individual patients.

In some AD patients, the Brain Gym® exercises serve to delay increasing problems of perception and motor coordination deficits. These exercises have been found to forestall the common difficulty in following flows of movement or of even copying them.

"It's remarkable," state the researchers, "that deficits in movement that generally impede learning, and that are very often seen in children with learning problems, are noticeable in Alzheimer's patients." ■

(Drabben-Thiemann, 2002)

Effect of Brain Gym® exercises on cognitive performance in AD

Pre-Tests and Post-Tests	Brain Gym® group % change in re-test after 45 min. of Brain Gym® exercises	Control Group % change in re-test without Brain Gym® exercises
#1 Word lists	+ 13%	+ 9%
#2 Conversion of numbers (i.e., words = numerical values)	+ 18%	+ 8%
#3 Shopping items	+ 21%	- 1%
#4 Repeating sequence of numbers backwards	+ 1%	- 11%
#5 Repeating word lists	+ 79%	+ 39%
Overall	+ 23%	+ 3%

Right-brain/Left-brain information processing differences

Mode	Left brain (Controls right side of body)	Right brain (Controls left side of body)
Thinking	Time bound. Rational, logical, sequentialor linear. Analytical, interpretive. Synthesis of sensory input.	Space bound. Concrete, appears rational. Artistic, intuitive, holistic. Spirituality.
Language	Hearing words. Writing words. Voice recognition. Reading. Speech comprehension. Verbal memory.	Metamorphic. Singing songs. Face and form recognition. Draw figures, body image.
Mathematics	Algebraic functions: add, subtract, multiply.	Geometric, spatial, relational.
Problem solving	Focus on specifics. Breaks problems into parts. Linear, sequential. Details.	Focus on generalities. Grasps problems in totality.
Organizational	Action mode - primed to manipulate environment. Focal attention. Heightened boundary perception. Object oriented. Dominance of formal over sensory.	Grasps relational dimensions, patterns. Receptive mode - primed to take in environment. Diffuse attention. Boundary fusion. Dominance of senses.
Inter-actional	Controlled, consistent. Explicit, directed, objective. Judgemental, evaluative.	Emotive. Affect-laden. Tacit (implied). Tolerant of ambiguity, subjective.
Operational	Figures things out in step-wise order. One idea follows another. Comfortable with precise connotations. Right/wrong. Computer-like functions. Memory for verbal and auditory stimuli.	Non-judgemental, non-critical. Makes leaps of intuition. Creativity. Pattern recognition and relationships form basis of ideas. Comfortable with alternatives and multiple explanations.
Activities to strengthen	Cross word puzzles, word games. Memorize a poem. Keep lists. Do mathematics by hand rather than a calculator. Read upside down. Learn a language.	Jigsaw puzzles, Rubik's cube. Listen to music that is different from your usual. Doodle. Modify habits: use other hand to brush teeth, write, etc.

What do you see, the old woman or young lady?

Visually connecting with the old woman is a left brain action.
Visually connecting to the young lady is a right brain action.

The right and left **hemispheres** of the brain are connected by a large grouping of axons, or connecting fibres, called the **corpus callosum.** Damage, as in a dementia, to these connecting fibres results in disconnection syndromes in which each hemisphere now functions in isolation. In the adjacent figure, you should be able to visualize the young woman and old lady at will. Try the *cross crawl* exercise next page if you're having problems.

Disconnection between areas responsible for vision and memory result in failure to recognize faces; however, the person may still be able to recognize voices corresponding to those faces.

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Brain Gym® exercises

Brain Gym® takes only five to ten minutes to implement, and requires no special equipment or space. The group leader or therapist will focus on the performance of specific physical activities that activate the brain.

1. Mid-line movements:

The mid-line movements focus on the left-right movement across the mid-line of the body. Such movements are essential for integrated learning, spacial awareness, greater co-ordination and enhanced hearing and vision. These movements are represented in the following exercises:

The Lazy 8 ∞

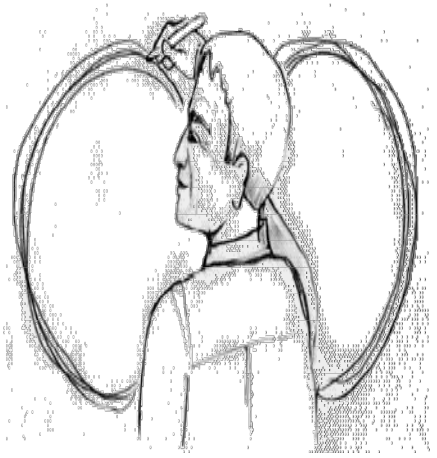
The above is a graphic of what resembles the symbol for *infinity*, and the path for the movement required in this exercise. The hand starts at a mid-point and moves up and to the left, activating the right side of the brain (that is responsible for merging thoughts together and interpreting music). Then the hand loops to the right, crosses the mid-point of the brain and initiates activity on the left side of the brain (which is responsible for discerning patterns and understanding language, among others). The eyes follow the movement of the hand or finger as it draws or traces the figure.

After performing the movements with one hand, switch to the other hand, repeat, and then do the movement with hands together.

The facilitator should encourage this exercise until the movements are smooth, or as smooth as can be expected from the client/resident.

The "Lazy 8" movement "wakes up" the whole brain, and can be done in the air, traced on a flip chart, or painted free hand. This is an exercise that is easy to do at any time, but is especially helpful if one feels tired, or needs energy or inspiration.

The Lazy Eight



The Cross Crawl

In a standing position, "march" in place, alternately touching each hand to the opposite knee as it rises. Continue the alternating exercise while performing four to eight complete, relaxing breaths. A variation of this movement can be done in a sitting or wheelchair position.

The "Cross Crawl" activates both brain hemispheres simultaneously. It engages the brain for co-ordinating visual, auditory and kinesthetic (muscle/motion) capabilities, thereby improving such skills as listening, reading, writing, and memory. **(See adjacent graphic depicting the exercise).**

2. Lengthening activities:

Lengthening activities help to develop and reinforce those neural pathways that enable people to make connections between what they already know in the back of the brain, and the ability to express and process that information in the front of the brain.

By relaxing the neck and muscles of the upper back that tend to become contracted under stress, there is a restoring of balance and the sense of spacial relationships. These are the recommended exercises:

The Owl

With the left hand, grasp the top of the right shoulder muscle, near the neck, and squeeze it firmly. Inhale deeply. Exhale as you turn the head to look comfortably back over the right shoulder; as the head is returned to the centre, inhale deeply. Exhale as you turn the head to look over the left shoulder, and inhale as the head is returned to the centre again. Now, exhale as you drop the head forward, lowering the chin to the chest. Inhale as you raise your head again.

This exercise is repeated three or more breaths in each of the three directions (right shoulder, left shoulder, centre), as the shoulder and neck relax.

Now do the "Owl" movement while squeezing the left shoulder with the

The Cross Crawl

right hand, repeating over three or more breaths in each direction.

The purpose of the "Owl" movement is to release tension in the muscles of the shoulders and neck, thereby improving listening comprehension, as well as thinking/speaking abilities.

The Owl

3. Energy exercises:

The brain has billions of tiny nerve cells or neurons. Like a telephone switchboard, they hook up different circuits (nerves) in the body. The "Energy Exercises" facilitate the flow or connections between these neurons. The result is an increase in co-ordination between thought and action by facilitating focus and attention in the rational centres of the brain necessary for fine-motor skills and learning.

Drinking Water

Water makes up two-thirds of the human body. It is necessary for electrical and chemical actions in the brain and central nervous system. Stress, however, depletes the body of water. To enable the full utilization of brain cell function, especially in the brain, it is necessary for water to be consumed. The average recommendation is 6-8 glasses per day.

The Energy Yawn

While pretending to yawn, close the eyes tight and massage the areas covering the upper and lower back molars. The muscle felt near the upper molars is involved in opening the mouth; the one felt over the lower molars does the closing of the mouth.

A deep, relaxing yawning sound is made while massaging the muscles. This exercise is repeated 3 to 6 times.

Yawning is a natural respiratory reflex action that increases circulation to the brain and stimulates the entire body.

4. Exercises for general improvement of the body:

Awareness and relaxation

Place feet shoulder-width apart, with knees slightly bent and eyes closed. Swing back and forth by shifting weight at the feet; swing to the left and then right, then circle around one's centre. Hands on the back of a chair can be used if the resident/client is not sufficiently stable or comfortable doing these movements.

Other awareness/relaxation movements include standing on the tips of the toes with eyes shut, or standing on one foot with the eyes shut.

Conclusion

Investigators the world over are searching for ways that will lead to a cure for Alzheimer's disease and other neurological disorders. The possibilities are endless, from vaccines to the alterations or re-configurations of our genetic profile. Unfortunately, even if success is imminent, there will continue to be people who will develop dementias.

While we await these new discoveries, rather than sit and wait for the loss of skills that these diseases bring, is it not important that we do all we can to slow the process?

Brain Gym has proven to be beneficial in helping children learn better. The exercises are easy and, maybe, they will be found to have a slowing or preventive role in dementia. ■

Canadian study shows exercise lowers risk of Alzheimer's

A new study suggests that exercise can lower the risk for Alzheimer's disease. The results were published last November in the *American Journal of Epidemiology* (Lindsay, J., Laurin, D., Verreault, R., Risk factors for Alzheimer's disease: a prospective analysis from the *Canadian Study of Health and Aging*; Vol. 156; Nov., 2002).

Over the course of five years, Canadian researchers studied a population of over 4,600 men and women aged 65 and older who did not have either Alzheimer's disease or other cognitive impairments to see how many would develop Alzheimer's disease.

Subjects completed detailed questionnaires about their lifestyles at the start of the study, which included information about factors such as smoking, diet, exercise, and alcohol use.

Exercise = 30% less risk

After five years, 194 cases of AD were diagnosed. Factors associated with lower risk included use of non-steroidal anti-inflammatories and regular wine and coffee consumption. The strongest association, however, was for regular physical activity, which lowered risk by as much as 30%.

The authors don't go so far as to suggest what it may be about exercise that lowers the risk for Alzheimer's disease, but they find the association "intriguing" and say that their results "warrant further research" on the relationship between exercise and AD.

Such further research, they said, could address questions such as how different types, frequencies, and duration of exercise affect Alzheimer's risk, and if the potential protective effect is the same for men and women.

Exercise has been shown to protect against diseases including osteoporosis, heart disease, and diabetes. If future studies confirm the results of this one, Alzheimer's disease may be added to that list some day. ■

Use it or lose it!

Study suggests mental stimulation reduces Alzheimer's risk

A study at the Rush Alzheimer's Disease Center in Chicago found that more participation in cognitively stimulating activities is associated with a reduced risk of Alzheimer's disease. The research looked at everyday activities like reading books or crossword games.

The study followed over 700 dementia-free participants age 65 and older for an average of 4.5 years from their initial assessments. Some 21 cognitive tests were administered to assess various aspects of memory, language, attention, and spatial ability.

Information processing

At the initial evaluations, participants were also asked about time typically spent in seven common activities that significantly involve information processing: viewing TV, listening to the radio, reading newspapers/magazines, reading books, playing games such as cards, checkers, crosswords, or other puzzles; and going to museums.

The frequency of participating in each activity was rated on a five-point scale, with the highest point assigned to participating in an activity every day or about every day, and the lowest point to engaging in an activity once a year or less. During the follow-up period, 111 people in the study developed AD.

Cognitive activity

In comparing the levels of cognitive activity with diagnosis of AD, the researchers found that the frequency of activity was related to the risk of developing AD. For each one point increase in the participants' scores on the scale of cognitive activities, the risk of developing AD decreased by 33 percent. On average, compared with someone with the lowest activity level, the risk of AD was reduced by 47 percent among those whose frequency of activity was highest.

What accounts for the association between cognitively stimulating activities and reduced risk of cognitive decline?

Scientists theorize that cognitive activities are protective in some way. Some speculate that repetition might improve the efficiency of certain cognitive skills and make them less vulnerable to the brain damage in AD.

Others speculate that it's compensatory mechanisms at work strengthening information processing skills to help compensate for age-related declines in other cognitive areas. ■

Source: *Journal of the American Medical Association*; February 13, 2002.

Cognitive deficits not always indicative of Alzheimer's

Could be reversible and treatable condition

Failing memory and other selective cognitive deficits may be symptoms of treatable and reversible conditions and not always signs that Alzheimer's disease is responsible, according to Danish scientists in a presentation at the International Conference on Alzheimer's Disease held last July in Sweden.

Over a period of 40 months, Dr. Gunhild Waldemar and her colleagues examined 785 patients with memory problems. Only 43% were diagnosed with AD or some other form of dementia. Six percent had selective amnesia, and 11% were found to have some other cognitive deficit. Twenty-eight percent had no serious cognitive deficits; 12% were not classified.

Reversible primary cause

In six percent of the patients with Alzheimer's or some other from of dementia, the researchers found that a potentially reversible primary cause of the memory disorder existed. This does not mean, however, that Alzheimer's disease is reversible, the researchers explained. It does mean that some people with Alzheimer's may have an accompanying condition that contributes to or causes memory loss.

"Overall, we found that 35% of the patients we saw had a potentially treatable concomitant condition that could influence cognitive function," explained Waldemar, a professor of neurology at Copenhagen University Hospital and director, Copenhagen Memory Clinic.

Underlying causes

The most frequently associated conditions diagnosed were depression, high blood pressure and thyroid disease. Other potentially reversible underlying causes identified were hydrocephalus (abnormal amount of fluid around the brain), and alcohol dependence.

"It is important to realize that the appearance of memory problems does not necessarily signal Alzheimer's disease or some other incurable condition," Waldemar said. "If the underlying cause of the memory problem is one that can be treated, it is important to identify it so that therapy can be initiated."

Treatable conditions

"Because people with Alzheimer's disease can have accompanying conditions that are treatable, it's important to identify these other diseases and institute whatever measures are necessary. This could help improve cognitive function and forestall the development of more severe symptoms," Waldemar pointed out. ■