

# BEST PRACTICES FOR FATIGUE RISK MANAGEMENT

by Dr. Don Melnychuk

## 1. Purpose

Human fatigue is recognized as being one of the primary causes of accidents in industry today. The costs of fatigue are a major human and financial burden to companies, workers, and their families.

Employers must ensure that everyone in their workplace is aware of potential workplace hazards (such as fatigue), and take steps to prevent workplace accidents, injuries and illnesses that may be a result of fatigue.

This workshop will present some of the key issues related to employee fatigue and identify resources for managing fatigue. This workshop will answer the following questions: What is fatigue? What variables impact fatigue? What are the consequences of fatigue? How do you overcome fatigue?

## 2. What is Fatigue?

Fatigue is the dynamic balance between competing forces; forces producing fatigue and forces reversing the effects of fatigue (recovery). Fatigue is the feeling of extreme tiredness or exhaustion, often involving muscle weakness.

There are a number of different definitions of fatigue, including:

- The consequence of inadequate restorative sleep.
- Extreme tiredness after physical or mental exertion.
- The increasing difficulty to perform physical or mental activities.

## 3. What Variables Impact Fatigue?

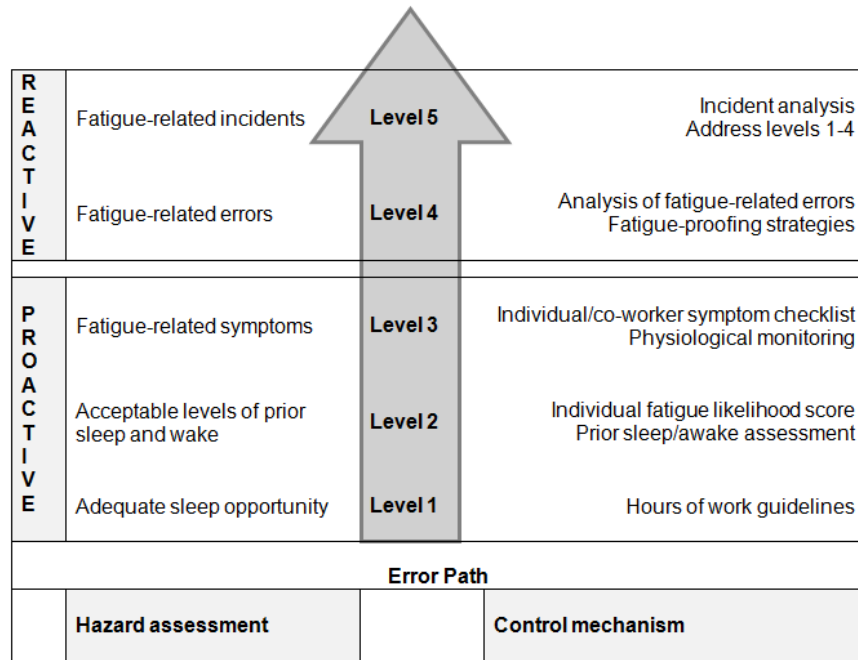
- Stress
- Health
- Nutrition
- Exposure
- Sleep debt
- Hydration
- Mental activity
- Physical activity
- Biological factors
- Life style choices
- Corporate culture
- Circadian rhythms
- Personal protective equipment
- Job requirements

## 4. What are the Consequences of Fatigue?

- Decreased alertness
- Slowed reaction time
- High error rate
- Failure to respond
- Poor communication
- Nodding off
- Below standard performance
- Reduced motivation
- Impaired judgment
- Poor decision making
- Reduced short-term memory
- Increased tendency for risk-taking

Workplace fatigue has been recognized as a major cause of accidents, which can cause injuries, and loss of life.

## 5. Five-Level Fatigue Hazard Control Model - Safe Work Practices and Procedures:



## 6. Fatigue Assessment:

Fatigue Assessment					Score
<b>Step 1: Sleep in prior 24 hours</b>					
Sleep	≤2 hours	3 hours	4 hours	≥5 hours	
Points	12	8	4	0	
<b>Step 2: Sleep in prior 48 hours</b>					
Sleep	≤8 hours	9 hours	10 hours	11 hours	≥12 hrs
Points	8	6	4	2	0
<b>Step 3: Prior wake</b>					
Count the total hours you will have been awake at the end of your shift. For every hour more than your sleep in the prior 48 hours, add one point.					

Individual Fatigue Likelihood	
<b>Step 4:</b> Add all points together to determine your score.	
<b>Total Score</b>	_____
<b>Score</b>	<b>Control Level</b>
1-4	Self-monitoring
5-8	Supervisor monitoring
9+	<b>Supervisor provides control measures.</b>

Individual controls	Team controls
Caffeine	Communicate fatigue status at team briefings
Energy drinks (use with caution)	Increase cross-checking
Adequate hydration and food intake	Increase supervision
Assessment of fatigue-related behaviours	Seek a second opinion (supervisor/co-worker)
Work break	Task reallocation
Quiet rest	Not acting as primary operator
Napping	Task rotation
Sleep	Defer non-urgent work
Increase physical activity	Delay decision-making (where appropriate)
Increase social interaction	Shift swaps
Double check familiar tasks	Fatigue leave - stand down - fit for work
Defer to a second opinion (supervisor/co-worker)	Reallocate duties after on call
Downgrade responsibilities (don't drive)	Safe-home policy
Increase supervision	

## **7. Improving Productivity During Circadian Trough:**

1. Start the morning with a good breakfast. Have a snack 2 or 3 hours later that morning to stabilize blood sugar level.
2. Keep lunches to a reasonable size. A large meal increases the urge to sleep.
3. Make sure your breakfast and lunch contain protein, carbohydrates and good fats. Avoid high fat lunches. Limit food that has high amounts of saturated or hydrogenated fats.
4. Avoid foods high in sugar since sugar can lead to blood sugar spikes that result in a powerful insulin response.
5. Hydration. Have a glass or two of cold water.
6. Ritualize the 2:00 PM to 4:00 PM time so that tasks requiring precise concentration are routinely done at other times.
7. Go for a brisk walk, get fresh air, get natural light at this time, or have a brief stretching routine.
8. Learn to take 15 to 20 minute power naps. A power nap can return two hours of high productivity.

## **8. Good Sleep Habits:**

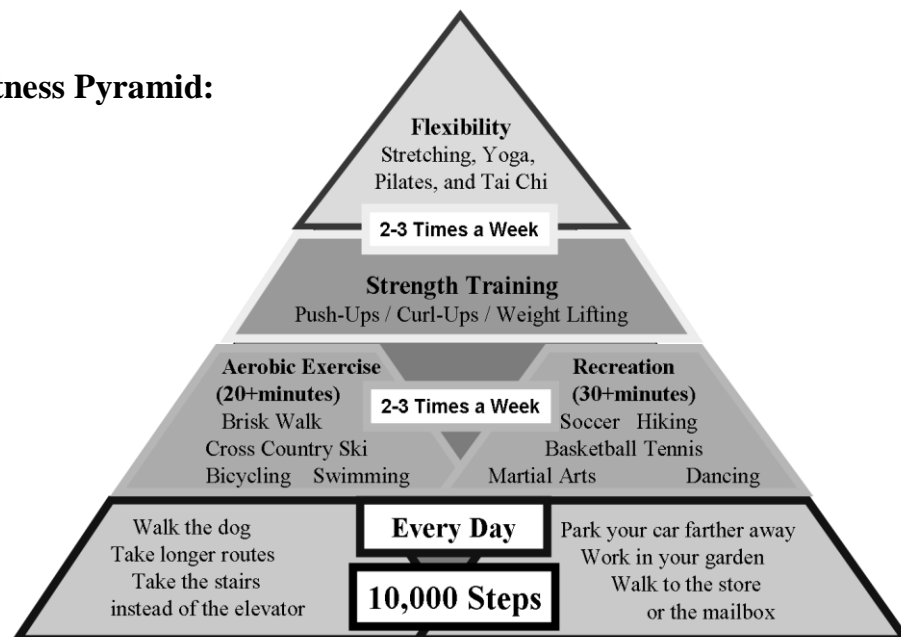
Try to follow these good sleep habits so that you can get the best possible sleep:

1. Get an adequate amount of sleep every night. Identify the amount of sleep you need to be fully alert all day long, and get that amount every night.
2. Get continuous sleep. For sleep to be rejuvenating, you should get your required amount of sleep in one continuous block.
3. Stick to the same schedule. Try to wake up and go to bed at the same time each day.
4. After finishing a hard day at work it is really important to wind down. Build in time during the evening to relax and recover. If there are things on your mind, set aside time before or after supper to worry about them. Don't discuss or think about stressful things just before you go to sleep.
5. Develop a regular bedtime routine. Develop routines to practice before you go to sleep. Have a shower or hot bath and bring light reading material such as a favorite magazine.
6. Make up for lost sleep as soon as possible. To catch up, go to bed earlier.
7. Keep your bedroom dark and quiet. Sleep on a good bed.
8. A somewhat cool 19 to 20 degrees Celsius room also contributes to a better sleep.
9. Aerobic exercise increases deep sleep, but don't do it close to bedtime.
10. Reduce caffeine intake for six hours before going to bed. Caffeine will prevent you from easily falling asleep.
11. Avoid alcohol near bedtime. Both NREM (deep, restorative) and REM (active dreaming) sleep will be suppressed, and you will experience early-morning awakening if you drink alcohol within two hours of bedtime.

## 9. High Performance Nutrition:

1. Choose easy to digest foods such as fish, lean meats, skinless chicken, rice, vegetables, soybeans, tofu, fruits, whole grain breads, and cereals, and low fat milk or cheese products.
2. Cut down on heavy, saturated fat found in foods such as fatty meats, pastries, pizza, potato chips, rich dairy products, sausages, pork and fried foods. While adults need some dietary fat in order to be well, most simply eat too much. As a result many people are overweight and have high blood cholesterol.
3. For extra energy eat more protein. Protein contains the amino acid, tyrosine, which converts to the alertness neurotransmitters norepinephrine and dopamine. Proteins include: lean meats, skinless chicken, fish, soybeans, and low fat milk or cheese products. Meat and alternatives should be 3 to 4 ounces for lunch and supper, for a total of 6 to 8 ounces per day (2 decks of cards) (*Norepinephrine and dopamine*).
4. To induce sleep and calm nerves eat some carbohydrates prior to going to sleep. Carbohydrate assists the amino acid, tryptophan, which converts to the calming neurotransmitter serotonin. Carbohydrates include: corn flakes cereal, bread, mashed potatoes, waffles, fruit, granola, and macaroni and other pastas (*Serotonin*).
5. Moderate blood sugar level by having complex carbohydrates. Include fresh fruit and vegetables (*Rainbow concept*).
6. Add fiber to your diet with plenty of vegetables, cereals, and whole grain breads (*Fiber should be 30 grams*).
7. Follow the 50% complex carbohydrates, 30% fat, and 20% protein rule. Have complex carbohydrates, protein, and healthy fat at each meal to satisfy and provide energy for 3 to 4 hours (*Glycemic Index*).
8. Try to follow a regular three meal a day pattern. Have at least one hot meal a day. Supplement these meals with snacks every two to three hours (*Grazing versus gorging*).
9. Drink 6 to 8 glasses of water a day (*Hydration*).
10. Avoid food and beverages containing caffeine (e.g. coffee, cola's) within 4 hours of bedtime.
11. You can have a light snack before going to bed. In the same way that a too-full stomach can disturb sleep, so can hunger. Choose traditional breakfast foods such as carbohydrates, cereals, toast, or wheat thins.

## 10. The Fitness Pyramid:



# FATIGUE MANAGEMENT: A WAKE-UP CALL



Dr. Don Melnychuk is a psychologist, nationally recognized speaker and trainer

'Dr. Don' on the risks of – and remedies for – worker fatigue

BY ROBERT J. HOLT

**Y**ou wouldn't let a friend polish off five bottles of beer and get behind the wheel of their car. It's dangerous, of course, and everyone knows it. And yet, when you or your crew show up to the job site tired, you may be walking into a situation that's just as dangerous.

"We have to realize," says Dr. Don Melnychuk, "that in the same way we look at drug and alcohol impairment, fatigue is just as severe ... when we say fit for duty, we have to put in there, alcohol-free, drug-free, *fatigue-free*."

Melnychuk is a psychologist with over 21 years of experience, specializing in stress and fatigue management. He's also a nationally-recognized speaker, trainer and writer who has worked with clients like Epcor, Telus and the Alberta Roadbuilders and Heavy Construction Association. 'Dr. Don' helps his clients to develop fatigue risk management systems, educating workers and supervisors about the dangers of fatigue on the job and how to overcome them.

Simply put, fatigue is the feeling of extreme tiredness or exhaustion. When we work too hard for too long, without appropriate recovery time, fatigue sets in. And, as Dr. Don is quick to point out, it can be a very real hazard in the construction industry.

Melnychuk cites an Australian study which found that after being awake for 17 hours straight, a person's reaction times can be just as impaired as someone with a blood alcohol content of 0.05 per cent. In most provinces (including Manitoba), that would be enough to earn an instant license suspension if you were behind the wheel.

**"When we say fit for duty, we have to put in there, alcohol-free, drug-free, fatigue-free."**

– Dr. Don Melnychuk, Psychologist

"We've got the science to back that up," says Melnychuk, "and that's the one that's really hitting home for a lot of workers."

The solution to fatigue may seem straightforward – try and avoid the all-nighter – but Dr. Don is quick to point out there’s far more to it than that. “A *sleep debt* will accumulate, that’s the other thing our construction workers have to be aware of,” he explains. Let’s say you need eight hours of sleep to feel rested the next day, but you’ve only been getting five hours a night. In one work-week, all those missed hours add up to 15 hours of recovery time your body hasn’t gotten.

“The further away you get from not having the right number of hours of sleep you need,” says Melnychuk, “the harder your brain will force you to eventually sleep.” Over time, that sleep debt can be just as detrimental – and dangerous – as staying awake for 18 or 20 hours all at once.

Of course, there are a number of sleep disorders – insomnia and sleep apnea being among the most common – which can severely impact worker fatigue and

for these Melnychuk recommends professional treatment.

“Most sleep disorders can be treated,” he says, “and the result could save your life.”

Fatigue risk management is about far more than just getting in your 40 winks each night. The field of strategies to combat the issue within workplace safety is diverse and involves employers and employees alike.

“We have a tipping point here,” says Melnychuk. “Industry, government and science are all together on this now, and what they’re forming is a whole new emphasis when it comes to fatigue risk management ... the whole idea is not to be punitive, it’s to be constructive and helpful. It’s to give [workers] counter-measures and fatigue-proof them from the dangers, the risk that they’re involved in. It’s a win-win.”

*For more on Dr. Don, be sure to check out [www.donmelnichuk.com](http://www.donmelnichuk.com).*

**Fatigue Management: A Wake-Up ‘Dr. Don’ on the risks of – and remedies for – worker fatigue**  
**By Robert J . Holt**

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# INTRODUCING: DON MELNYCHUK, PH.D.

Dr. Don Melnychuk is a nationally recognized speaker, trainer and writer who specializes in the areas of stress and fatigue management, adapting to shiftwork and motivation.

Known to many as “Dr. Don”, he has done more than 1500 presentations over the last twenty-one years to groups as small as nine and as large as several thousand.

Participants enjoy his down to earth style, and feel that he is able to make the session relevant to their needs. Don cares about the people who come to listen to him.

Some of Don’s keynote sessions include:

- ✓ **Taking Control – 9 Ways to Manage Work and Personal Stress**
- ✓ **Revitalize Yourself – 6 Ways to Build Stamina and Manage Fatigue**
- ✓ **Best Practices for Fatigue Risk Management**
- ✓ **Seven Ways to Stay Motivated in a Changing World**
- ✓ **Eight Ways to Communicate with Confidence and Control**

Dr. Melnychuk has earned the reputation of being a stimulating and entertaining speaker. Within a dynamic, interactive learning environment, he offers participants a fast-paced enjoyable program that provides them with new insights and skills to improve performance.

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Whether it’s a one hour keynote, a half or a full day seminar or a multi-day training program Dr. Don Melnychuk will energize your group for action.

Don holds a Ph.D. in Counseling Psychology from the University of Alberta and a M.Ed. in Applied Psychology from the University of Toronto. He is a Chartered Psychologist with over 21 years experience in the field. Don is a member of the College of Alberta Psychologists, Canadian Association of Professional Speakers and the Global Speakers Federation.

**NADON CONSULTING LTD.**

EDMONTON, ALBERTA

nadon@shaw.ca

www.donmelnychuk.com

(780) 245-6984