



# taylor'd ERGO TIMES

## From research 2 practice: the RCRA

Jim Potvin and Murray Gibson recently developed a new analysis method that we, at Taylor'd Ergo, have been putting to good practice. This method, called the "Recommended Cumulative Recovery Allowance" (RCRA), allows us to evaluate the *combined* effect of many different tasks on one muscle group, which is useful for assessing repetitive work.

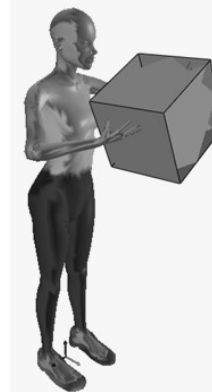
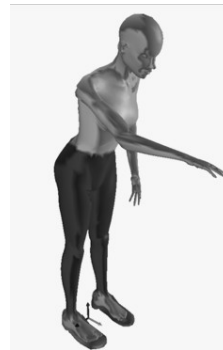
### A case study

Let's use a food processing job where an operator at a conveyor belt has to align food portions under a laser light, before they enter a processing tunnel. The operator reaches forward about 60 cm (24"), for 1 second at a time, 12 times per minute (on average). The portions weigh 200 grams. This task is shown in the graphic, top right. Every 3 minutes, s/he also loads a 9 kg box of seasoning from a pallet to a hopper, as shown below right. Let's assume that we've been asked to assess the risk of shoulder injury. In the past, we would have identified reaching this far forward, 12 times per minute, as high risk. We would have assessed the lifting task with the Liberty Mutual tables, and determined that the weight fell just within guidelines for 75% of a female worker population, and therefore the lift was "acceptable" or "low risk".

### The Potvin/Gibson method

Potvin and Gibson's new RCRA method, presented at the recent PREMUS conference in Toronto, accounts for the fact that every effort requires a specific amount of recovery time. A heavy effort requires more recovery time than a lighter effort. A long duration effort requires more recovery time than a shorter effort. Their tool calculates how much recovery time is needed for each specific duration and level of exertion. It then calculates how much recovery time is needed, and then compares what is needed with what is *actually* available. It allows us to look at each task on its own, but we can also look at a job, or even a job rotation. This has never been possible before.

For our case study, let's look at a 3 minute cycle (180 seconds). In that time, the operator would load one box, and would reach forward to align food portions 36 times, for 1 second each time. To use the RCRA, we would need to know how long each effort takes, and what portion of the operator's strength is required. (We need to do a bit of background work for this. My biomechanical analysis indicates that aligning portions takes 21% of a female's



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### Our team

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shoulder strength, and lifting the box takes 68% of strength.) When we enter our data into the spreadsheet, it tells us this:

Task	Effort (% of strength)	Frequency per cycle	Effort duration (each)	Total effort duration per cycle	Recovery time needed per cycle	Recovery available (cycle time minus total effort duration)	OK?
Align portions	21%	36	1 second	36 seconds	60 seconds	144 seconds	Yes
Load case	68%	1	1 second	1 seconds	114 seconds	179 seconds	Yes
Overall job				37 seconds	174 seconds	143 seconds	No

On their own, the reaching or lifting demands would be OK. But the cycle does not allow enough recovery time for these two tasks combined.

The method allows us to explore the effects of various improvements. Any of these changes could reduce the recovery time needed, to make the job acceptable:

- make the lift less awkward (for example, by lowering the hopper)
- reduce the case weight (by ordering seasoning in smaller boxes)
- reduce the frequency of lifting (for example, by sharing this task amongst more workers), or
- reduce how long the lift takes (for example by using a lift table to reduce how long the operator has to hold the load),
- reduce the reach to the portions on the belt
- add a rotation to a job with lower demands

The method is more time consuming than our previous methods, because it requires accurate exposure data and a biomechanical analysis for every task (not just the tasks that have been identified as a concern). We have to time each exertion and we need to know how often each task is performed. We also have to assess every muscle group separately; to assess the risk of back injury for the job above, we would have to repeat this process for back demands.

We have been using this method where it's worth the time to do all this – to evaluate the effect of job rotation, or to look at tasks with multiple tasks affecting the same muscle group. We still use the Liberty Mutual tables for jobs that involve manual handling (without significant other contributing demands), because it's much faster and it applies well in those situations. **If you have a situation where this type of analysis would be helpful, please give us a call!**

## Ergo gadgets

Have you ever seen one of these? (Search for “wine glass plate clip” to find several versions.) When you're at a social event, this gadgets is really helpful! It secures a wine glass with a stem to the side of your plate, so you can hold both items with one hand, freeing up the other hand for eating, drinking, and shaking hands.



## Why you can trust us to make you look good

If you've ever hired a “consultant” before, or recommended one to someone else, then you understand the risks, perhaps better than we do. A “bad” consultant can be a source of embarrassment for the person who recommended him (or her), by his/her behavior or approach, or by the report and recommendations that s/he leaves behind. We've put a lot of effort into protecting our clients from these

troubles. You can trust Taylor'd Ergo to provide excellent ergonomics support, that will reflect well on you. We avoid these consulting traps:

### “Sammy Surprise!”

A report should never include surprises, especially if it includes costly or challenging recommendations. We make a point of sitting with our key contacts after we've evaluated the hazards, so we can give you a heads-up on what we found, and we involve you in identifying appropriate solutions. We provide a draft report for our key contact person to review, before it is issued for distribution. If you have questions or concerns, you have an opportunity to have them addressed before anyone else sees the report. We might make technique suggestions directly to workers, but any recommendation involving an expense is run by our key contacts first. We also help you to investigate alternative solutions that may be possible.

### “Sloppy Sue”

Have you ever received a report that was full of typos, or difficult to understand? Our reports are peer-reviewed, so they are clean and tidy before you get them. Have you ever been embarrassed by a contractor's attire or work methods? We wear uniforms, and we follow



## Ergo Speaker

If your professional association is looking for an

ergonomist to speak at a chapter meeting, please contact Carrie. We would be happy to come out to speak with groups of HR professionals, safety professionals, disability managers, production managers, or engineers. Sample topics:

- Obesity in the workplace
- Ergo and aging
- Ergo and design
- Maintaining momentum in an ergo program



“standard operating procedures” so that you get the same professional approach from any of our staff. We show up with the equipment and PPE required to complete the work you’ve hired us to do. When we meet a client face-to-face for the first time, the client often tells us that s/he feels like s/he knows us, because s/he has been reading our newsletter for years. You’ve seen our photos, and you’ve followed our professional (and some of our personal) lives. So although we may never have met, you should know that we’re good people, trying hard to do the right thing, just like you.

**“Scope Stretching Steve”**

Our ergonomists are often asked by workers to take a look at another job, while we are on-site for a specific project. We’re happy to expand a project, if you authorise the work. But we won’t wander off to stick our noses into a project that is outside the scope of what we’ve been asked. We don’t ignore employees’ concerns; it’s great that they feel comfortable approaching us. We thank them for coming to us, explain that we were brought in for a specific project, and direct them to report their concerns to their supervisor. We also let our key contact know about the interaction so that s/he can follow up.

**“Veruca Salt – I want it now”**

Sometimes, consultants act like they’re spending someone else’s money! If you tell us at the beginning of a project that you do not have funds for new [chairs/desks/hoists/bus seats], then we will work within those budgetary constraints, and provide recommendations that respect the limits you set. The recommendations must address the hazards of course, but they don’t have to be the “Cadillac” version! We understand that a report can create expectations. If we identify a hazard that cannot be addressed within your budget constraints, we will suggest interim measures, until funds become available.

**“Where’s Waldo’s time gone?”**

I have received invoices from contractors that provided no information about how their time was spent. How do I know if it really took 16 hours to format my hard drive, or install a new sink? We are very diligent about tracking our activities, so you can see exactly how our time has been used. We also work hard to complete our projects within the time quoted, and we charge you only for the time we use. It’s very, very rare for us to request additional time for a project, even when project delays are beyond our control. We typically do our work on-site, so you can actually see what we’re doing, and get involved in our process.

**“Leaping Larry”**

We do a thorough evaluation of the job, so we don’t leap to conclusions. “Checklist” hazard identification tools are good for screening, but they may identify “high risk” tasks on every job. Our objective analyses tell you, objectively, which hazards are high priority, and if a proposed change will reduce the risk. If we find a job that is acceptable, we will write that in the report.

**“Yolanda, Yes”**

We understand that we are hired to provide an objective opinion. We train our ergonomists to stay neutral during an assessment, even if that means wearing a “poker face”. If a situation shocks us, no one should know. When we interview, we want facts and unbiased opinions, not hysterics and exaggeration. Our technical analysis provides the objective outcome. We are cautious with our comments, before the analysis is complete.

We haven’t stayed in business for over 20 years by providing poor service; we’ve learned from our own mistakes, and we’ve made a point of improving on our competitors’ practices. If you haven’t worked with us recently, give us a call. You can trust us to make you look good!

**Ergo, Un-wound**

Starting at the top left arrow, wind your way left, right, up, or down, continuously through the puzzle to reveal some “ergo”

wisdom from Alan Quilley.

**Hints:**

The sentence starts, “ANYONE....” (See grey line.)

There are no “x’s” in the solution.

You should not have to cross a black line.

→	↑	D	A	Y	Z	E	B	R	A	I	S	E	T	W	X	I	S	H	I	N	G	O	X	S	C	I	C	X	M	O	W	→		
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## Fall technical training with Taylor'd Ergo training

For more details, or to register online, please visit our website [www.taylordergo.com/workshop/](http://www.taylordergo.com/workshop/).

Please register me for:



**Physical Demands Analysis**, September 7-8, 2016

This two-day session will allow participants, including ergo co-op students, nurses, safety coordinators, and return-to-work coordinators, to collect data and write an objective, concise physical demands analysis report for the WSIB, employee's doctor, physiotherapist, or for internal company use. Participants learn how to measure forces, quantify "repetition", obtain useful workstation and task photos, and more!

\$785+hst HST#89765 6377



**Lifting train-the-trainer**, September 28, 2016

In this one-day session, participants get hands-on practice, learning how and why to lift using 15 proper lifting techniques. They will also learn to effectively coach others to use these tips. Participants get coaching plans with sample "takeaways" to reinforce all 15 messages.

\$370+hst HST#89765 6377



**Ergo Design** October 20, 2016

Participants, including engineers, safety coordinators, and ergo team members, will learn to incorporate effective ergonomic design features into new workstations, jobs, and layouts, using our detailed ergo design guidelines. Guidelines include height, reach, clearance, tool selection, work flow, and many more.

\$425+hst HST#89765 6377

**ONLINE registration and payment is now available at [www.taylordergo.com](http://www.taylordergo.com). We're also happy to receive your registration "old-fashioned way."** Just complete and fax this page to 519 623 9164, with your purchase order number, or mail it with a cheque to Taylor'd Ergonomics, 38 Water Street South, Cambridge, ON N1R 3C5. Your registration will be **confirmed by email, 1-2 weeks before the course**. Register early, as space is limited. Cancellations within one week of the workshop will be subject to a \$100 charge, although substitutions are welcome at any time.

Name(s): \_\_\_\_\_ Company: \_\_\_\_\_

Phone: \_\_\_\_\_ e-mail: \_\_\_\_\_

P.O.# \_\_\_\_\_ (if no PO, please send cheque with registration)



**Need in-house ergo training for your employees?** Our hands-on, skill-based one-hour "face-2-face" sessions (driver, office, industrial, or lifting) can be provided for as little as \$275/group (4 sessions in one day), plus materials (\$5 per person), and mileage. Find more info under the "training" tab at [www.taylordergo.com](http://www.taylordergo.com), or call us for info at 519 623 7733.



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