

ارزیابی اثربخشی تمرینات هوازی بی‌هوازی در افراد سالم

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چکیده

هدف: شناسایی حاکمیت فعالیت بدنی، یادگیری و افزایش اندام در انسان و حیوان در دوره میانه و غزبه. مقایسه اثرات تمرینات هوازی و بی‌هوازی در حفظه میانه.

روش: در این مطالعه ۹۰ دانشجو در دو گروه ۳۰ نفره تقسیم شدند. گروه اول در مدت هفت هفته، جلسه‌ای یکبار در جلسه به مدت ۶۰ دقیقه تمرینات هوازی و بی‌هوازی استفاده از تردمیل با شدت ۶۰ تا ۷۰ درصد ضربان قلب بیشینه (۴ تا ۶ دوم، تمرین بی‌هوازی استفاده از تردمیل با شدت ۷۵ تا ۸۵ درصد ضربان قلب بیشینه) استفاده کردند. گروه سوم (کنترل) هیچ‌گونه تغییری در برنامه تمرینی خود نگرفت. کلیه آزمودنی‌ها در ابتدای و در پایان و آخرین جلسه به آزمایشگاه مراجعه کردند و حافظه آن‌ها برآورد و کسیر و کسیر بررسی شد.

افته‌ها: نتایج این مطالعه نشان داد که از خرده‌آمون‌های کسیر تغییرات معنی‌داری در سینه از مداخله در تمرینات هوازی و بی‌هوازی مشاهده شد. با تمرین هوازی $15/5 \pm 5/4$ و با تمرین بی‌هوازی $17/0 \pm 4/8$ کسیر کنترل $2/13 \pm 1/96$ تفاوت معنی‌داری بود ($p < 0/001$). به طوری که میانگین افزایش درصد افزایش گروه هوازی ($p < 0/001$) هم‌نشین در تمرینات هوازی و بی‌هوازی بود ($p < 0/001$) و گروه کنترل بیش‌تر از تمرینات هوازی و بی‌هوازی بود ($p = 0/381$).

نتیجه: به‌ارکلی، یافته‌های مطالعه حاکمیت است که تمرینات هوازی و بی‌هوازی در هفته‌ای یکبار در تمرینات هوازی و بی‌هوازی برای حفظه میانه و کسیر عمل‌کننده در حفظه میانه است. لذا ورزش هوازی و بی‌هوازی برای حفظه میانه توصیه می‌شود.

اژه‌ها: کلمیدی: تمرین هوازی، تمرین بی‌هوازی، حافظه.

مقدمه

در حال حاضر شواهدی مبنی بر این‌که ورزش فوایدی را برای عمل‌کرد مغز فراهم می‌آورد در دست است. فعالیت بدنی یادگیری و حافظه را در انسان و حیوان توسعه می‌دهد، به

علاوه یک سبک زندگی فعال از دست دادن عمل‌کرد شناختی را در پیری به تعویق می‌اندازد و یا از وقوع بیماری‌های تخریب‌کننده اعصاب جلوگیری می‌کند، ورزش باعث ایجاد تغییرات متعدد در مغز می‌گردد که مهم‌ترین آن‌ها رشد و

همکاران (۲۰۰۸) در مطالعه‌ای دیگر نتیجه گرفتند که در افراد فعال زمان واکنش سریع‌تر از افراد غیر فعال بود اما این اثر ورزش نبود، کار حافظه در هنگام و بلافاصله بعد از تمرین بیشینه کوتاه‌مدت کاهش یافت اما بعد از دوره بازگشت به حالت اولیه بهبود یافت تمرین شدید کوتاه‌مدت با تردمیل با کاهش کار حافظه در هنگام تمرین و بهبود کار حافظه در دوره بازگشت به حالت اولیه هم‌راه بود [۲۵]. اتر و همکاران (۲۰۱۴) در مطالعه‌ای نتیجه گرفتند که در شرایط مدرسه که یک دوره تمرین ورزشی شدید داده می‌شود فواید زیادی برای یادگیری و حافظه بلندمدت کودکان دارد [۲۶]. با توجه به نتایج مطالعات گذشته به نظر می‌رسد فعالیت ورزشی ممکن است بر حافظه تاثیر داشته باشد اما اثرات آن به درستی مشخص نیست و این تغییرات احتمالاً تابع نوع، شدت و مدت فعالیت ورزشی است با توجه به این‌که نتایج مطالعات در برخی موارد متناقض بوده و مطالعات کمی بر روی نمونه‌های انسانی صورت گرفته است ضرورت انجام چنین مطالعه‌ای که نوع، شدت و مدت فعالیت ورزشی مد نظر قرار گیرد، احساس می‌شود، لذا این تحقیق با هدف بررسی تاثیر ورزش هوازی و بی‌هوازی بر روی حافظه افراد سالم انجام گرفته است.

مواد و روش‌ها

روش پژوهش نیمه‌آزمایشی با طرح پیش‌آزمون-پس‌آزمون با گروه کنترل بود. جامعه آماری کلیه دانشجویان پسر دانشگاه آزاد اسلامی واحد سمنان بودند که ۹۰ نفر از دانشجویان پسر که درس تربیت بدنی را اخذ کرده بودند از روش نمونه‌گیری در دسترس به‌عنوان حجم نمونه انتخاب گردیدند و به‌طور تصادفی ساده در سه گروه ۳۰ نفره تقسیم شدند. گروه اول به مدت هشت هفته، هفته‌ای سه جلسه و هر جلسه به مدت ۶۰ دقیقه تحت تمرینات هوازی (با استفاده از تردمیل)، گروه دوم، تمرین بی‌هوازی (با استفاده از تردمیل) قرار گرفتند و در گروه سوم (کنترل) هیچ مداخله‌ای صورت نگرفت. کلیه ۹۰ نفر هم در ابتدای دوره و هم در پایان برنامه

بازسازی مغز است، تحقیقات انجام شده نشان می‌دهند افرادی که تمرینات فیزیکی انجام می‌دهند، سلول‌های مغزی بهتری را پرورش می‌دهند، مطالعات کنونی در این زمینه آشکار می‌سازند که مغز به طور قابل ملاحظه‌ای نسبت به ورزش پاسخ می‌دهد و تغییراتی در سطوح مولکولی، سلولی و آناتومیکی آن به‌وجود می‌آید. جالب این‌که خیلی از این تغییرات در مناطقی از مغز روی می‌دهند که از نظر یادگیری، حافظه و عمل‌کرد شناختی بالاتر حائز اهمیت بسیار می‌باشد [۵-۱]. مولکولی که به عنوان مولکول مهم در سلامت سلول عصبی، یادگیری و حافظه مطرح شده است، عامل رشد عصبی مشتق از مغز (BDNF: Brain-Derived Neurotrophic Factor) می‌باشد این فاکتور رشد، بقاء و سلامت طیفی از انواع نورون‌ها را بهبود بخشیده و یک تنظیم‌کننده مهم اعطاف در سلول‌های عصبی می‌باشد [۶]. بلومنتال و همکاران (۱۹۹۸) در مطالعه خود تفاوت معنی‌داری را در عمل‌کرد یادآوری حافظه در طول تمرین ورزشی مشاهده نکردند [۷]. آدلارد و همکاران (۲۰۰۴) در مطالعه خود نشان دادند که ورزش اختیاری یک ابزار غیر دارویی ساده برای نگه‌داری و ترمیم سطوح BDNF در مغز است [۸]. سیبیلی و همکاران (۲۰۰۷) در مطالعه‌ای نشان دادند که ورزش شدید ممکن است بیش‌ترین منفعت را برای بزرگسالان سالم داشته باشد به‌ویژه آن‌هایی که دارای عمل‌کرد شناختی پایین‌تری هستند، هم‌چنین نشان دادند که تاثیر ورزش بر حوزه شناختی تمام افراد یکسان نیست [۹]. هوانگ و همکاران (۲۰۱۳) عنوان کرده‌اند فعالیت‌های ورزشی هوازی موجب افزایش سطح BDNF در زنان و مردان سالم می‌شود [۱۰]. زولادز و همکاران (۲۰۰۸) نیز افزایش سطح BDNF را در مردان جوان سالم پس از یک دوره تمرین استقامتی نشان داده بودند [۱۱]. با این حال این موضوع مورد تایید ویلیامز و فریس (۲۰۱۲) نبوده است [۱۲]. در مطالعاتی ورزش هوازی و شدید موجب بهبودی عمل‌کرد حافظه کوتاه‌مدت و بلندمدت شده است [۱۳-۱۹] هم‌چنین در مطالعاتی دیگر اثر ورزش در سنین بالا موجب بهبود عمل‌کرد حافظه می‌شود مورد تایید قرار گرفته است [۲۰-۲۴]. لوبو و

۱- از آزمون حافظه وکسلر به عنوان یک مقیاس عینی برای ارزیابی حافظه استفاده شد. که روایی این آزمون ۷۴ درصد گزارش شده است [۲۷].

با این آزمون به طور کلی می توان:

- ۱- یادگیری و به خاطر آوری فوری (حافظه کوتاه مدت).
 - ۲- تمرکز و توجه
 - ۳- جهت یابی و به خاطر آوری حافظه طولانی مدت، را به دست آورد.
- در ابتدای و انتهای دوره از کلیه آزمودنی ها تست حافظه وکسلر گرفته شد.

از آزمون های آماری کلموگروف اسمیرنوف، آزمون های آنالیز واریانس یک طرفه، تست توکی و هم چنین کروسکال والیس برای تحلیل داده ها در سطح معنی داری ۵ درصد استفاده گردید. نرم افزار مورد استفاده SPSS 18.0 بوده است.

نتایج

میانگین سنی سه گروه ($p=0/202$) و هم چنین میانگین شاخص توده بدنی آنان ($p=0/108$) تفاوت معنی داری نداشت (جدول ۳).

میانگین نمره حافظه پس از مداخله در گروه با تمرین هوازی ($p<0/001$)، در گروه با تمرین بی هوازی ($p<0/001$) و هم چنین در گروه کنترل ($p<0/001$) به طور معنی داری افزایش یافت (جدول ۴). میانگین مقدار افزایش نمرات حافظه پس از مداخله در گروه با تمرین هوازی $15/50 \pm 5/41$ و گروه با تمرین بی هوازی $17/00 \pm 4/89$ و گروه کنترل $2/13 \pm 1/96$ بود که تفاوت در سه گروه معنی دار بود ($p<0/001$) (جدول ۴). به طوری که میانگین مقدار افزایش نمره حافظه گروه با تمرین هوازی با گروه کنترل ($p<0/001$)، هم چنین گروه با تمرین بی هوازی با گروه کنترل ($p<0/001$) تفاوت معنی دار داشت. اما میانگین مقدار افزایش نمره حافظه دو گروه با تمرین هوازی و بی هوازی تفاوت معنی دار نداشت ($p=0/381$) (جدول ۴).

و آخرین جلسه به آزمایشگاه حافظه دعوت شده و حافظه آن ها بر اساس آزمون وکسلر بررسی شد.

ورزش هوازی در این پژوهش دویدن بر روی نوار گردان (ساخت ایتالیا با نام technogym با قابلیت نمایش ضربان قلب) بود که در هشت هفته افراد با شدت ۶۰ تا ۷۰ درصد ضربان قلب بیشینه به فعالیت می پرداختند (جدول ۱). ورزش بی هوازی افراد با شدت ۷۵ تا ۸۵ درصد ضربان قلب بیشینه در سه مرحله (ست) با شیب ۲۰ درصد به فعالیت می پرداختند (جدول ۲). این تمرینات هفته ای سه جلسه و هر جلسه ۶۰ دقیقه بود که ۲۰ دقیقه اول به منظور گرم کردن، ۳۰ دقیقه برای مرحله اصلی فعالیت و ۱۰ دقیقه آخر به منظور سرد کردن بدن استفاده می شد.

جدول ۱. پروتکل تمرین هوازی بر روی نوار گردان

مدت (دقیقه)	شیب (درجه)	سرعت †	شدت *	
۳۰	۴	۴	۶۰	هفته اول
۳۰	۶	۴	۶۲	هفته دوم
۳۰	۸	۵	۶۴	هفته سوم
۳۰	۱۰	۵	۶۶	هفته چهارم
۳۰	۱۲	۵	۶۸	هفته پنجم
۳۰	۱۲	۶	۷۰	هفته ششم
۳۰	۱۲	۶	۷۰	هفته هفتم
۳۰	۱۲	۶	۷۰	هفته هشتم

جدول ۲. پروتکل تمرین بی هوازی بر روی نوار گردان

مدت زمان استراحت	مدت	شیب (درجه)	سرعت †	شدت *	
بین وهله ها (دقیقه)	۳	۱۰	۵	۷۵	هفته اول
	۳	۱۲	۶	۷۷	هفته دوم
	۳	۱۴	۶	۷۹	هفته سوم
	۳	۱۶	۷	۸۱	هفته چهارم
	۳	۱۸	۷	۸۳	هفته پنجم
	۳	۲۰	۸	۸۵	هفته ششم
	۳	۲۰	۸	۸۵	هفته هفتم
	۳	۲۰	۸	۸۵	هفته هشتم

* حداکثر ضربان قلب بیشینه و † مایل بر ساعت

جدول ۳. میانگین و انحراف معیار سن و شاخص توده بدنی به تفکیک گروه های تحت بررسی

p-value	گروه مورد بررسی						مشخصه
	کنترل		بی هوازی		هوازی		
	انحراف معیار	میانگین	انحراف معیار	میانگین	انحراف معیار	میانگین	
۰/۲۰۲	۱/۱	۲۲/۶	۲/۷	۲۲/۳	۲/۰	۲۳/۲	سن (سال)
۰/۱۰۸	۳/۹	۲۵/۰	۳/۲	۲۳/۴	۲/۹	۲۳/۴	شاخص توده بدنی (Kg/m ²)

جدول ۴. میانگین و انحراف معیار نمرات حافظه و تغییرات آنها قبل و بعد از آزمون در سه گروه مورد بررسی

گروه مورد بررسی	قبل مداخله		بعداز مداخله		تغییرات قبل و بعداز مداخله	
	میانگین	انحراف معیار	میانگین	انحراف معیار	میانگین	انحراف معیار
هوازی	۸۴/۲۰	۷/۰۰	۹۹/۷۰	۴/۲۸	۱۵/۵۰	۵/۴۱
بی هوازی	۸۴/۴۳	۷/۲۱	۱۰۱/۴۳	۴/۳۱	۱۷/۰۰	۴/۸۹
کنترل	۸۶/۵۷	۷/۱۶	۸۸/۷۰	۶/۶۸	۲/۱۳	۱/۹۶
p-value	۰/۳۷۰		<۰/۰۰۱		<۰/۰۰۱	

با توجه به یافته‌های پژوهشی خرده‌آزمون‌های تست وکسلر، ورزش بی‌هوازی موجب بهبود عمل‌کرد حافظه کوتاه‌مدت شده است که این یافته پژوهشی با برخی از مطالعات هم‌خوانی دارد [۲۱،۱۱،۱۰] البته در بیش‌تر مطالعات نشان داده شده است که چه ورزش هوازی و چه ورزش بی‌هوازی باعث بهبود عمل‌کرد حافظه کوتاه‌مدت و بلندمدت شده است [۲۴،۲۳،۲۱،۲۰،۱۵،۹،۸] و نتایج پژوهش حاضر نیز موید این موضوع است. لذا تغییرات در بهره حافظه تست وکسلر که هر دو حافظه کوتاه‌مدت و بلندمدت را اندازه‌گیری می‌کند، در هر دو گروه با تمرینات هوازی و بی‌هوازی معنی‌دار بوده به عبارتی ورزش توانسته وضعیت حافظه را بهبود بخشد که نشان‌دهنده تاثیر مثبت ورزش در این خصوص بوده است. ولی از نظر مقایسه دو نوع ورزش هوازی و بی‌هوازی این تغییرات معنی‌دار نبوده است که پیشنهاد می‌گردد مطالعاتی با حجم نمونه بیش‌تر و مدت زمان تمرینات ورزشی طولانی‌تر از نظر دوره زمانی، صورت گیرد.

در مطالعه سیبلی و همکاران (۲۰۰۷) نشان داده شد که ورزش شدید ممکن است بیش‌ترین منفعت را برای بزرگسالان سالم داشته باشد در این مطالعه نیز یافته مذکور تایید قرار گرفت و نیز در مطالعه مذکور تاثیر ورزش بر حوزه شناختی

بحث و نتیجه‌گیری

یافته‌های تحقیق حاضر نشان داد که یک دوره تمرینات ورزشی هشت هفته‌ای هوازی و بی‌هوازی، بهبود معنی‌داری در بهره حافظه تست وکسلر ایجاد می‌کند. اما تفاوت معنی‌داری در وضعیت حافظه از نظر نوع تمرینات بی‌هوازی و هوازی دیده نشد. این نتایج با برخی مطالعات هم‌خوانی دارد [۸-۱۲، ۱۵، ۲۰، ۲۱، ۲۳، ۲۴، ۲۶] ولی با برخی مطالعات هم‌خوانی ندارد [۷، ۱۲] که البته این عدم هم‌خوانی احتمالاً به علت نمونه‌های مورد مطالعه و شیوه‌های تمرینی تحقیق حاضر است و یا در برخی دیگر مطالعات نشان داده شده است که فقط ورزش بی‌هوازی موجب بهبودی عمل‌کرد حافظه می‌شود [۲۱، ۱۱، ۱۰] که این مطالعات نیز با نتایج تحقیقی حاضر هم‌خوانی دارد و این تغییرات در ورزش بی‌هوازی مطالعه حاضر به خوبی مورد تایید قرار گرفته است. علت اصلی در بهبود عمل‌کرد حافظه ترشح مولکول BDNF در هیپوکمپ مغز می‌باشد که نقش بسزایی در این فرایند دارد و این یافته در اکثر مطالعات پژوهشی مورد تایید قرار گرفته است [۲۶، ۲۳، ۸، ۷]. البته این یافته پژوهشی با برخی مطالعات هم‌خوانی ندارد [۷، ۱۲]. که در مطالعات مذکور فقط ورزش هوازی را موجب بهبود عمل‌کرد حافظه دانسته‌اند.

- [1] Fillit HM, Butler RN, O'Connell AW, et al. Achieving and maintaining cognitive vitality with aging. *Mayo Clin Proc* 2002; 77: 681-696.
- [2] Kramer AF, Erickson KI, Colcombe SJ. Exercise, cognition, and the aging brain. *J Appl Physiol* 2006; 101: 1237-1242.
- [3] Erickson KI, Kramer AF. Aerobic exercise effects on cognitive and neural plasticity in older adults. *Br J Sports Med* 2009; 43: 22-24.
- [4] Hillman CH, Erickson KI, Kramer AF. Exercise your heart: Exercise effects on brain and cognition. *Nat Rev Neurosci* 2008; 9: 58-65.
- [5] Cotman CW, Berchtold NC, Christie LA. Exercise builds brain health: key roles of growth factor cascades and inflammation. *Trends Neurosci* 2007; 30: 464-472.
- [6] Tyler WJ, Alonso M, Bramham CR, Pozzo-Miller LD. From acquisition to consolidation: on the role of brain-derived neurotrophic factor signaling in hippocampal - dependent learning. *Learn Mem* 2002; 9: 224-237.
- [7] Blumenthal JA, Madden DJ. Effects of aerobic exercise training, age, and physical fitness on memory-search performance. *Psychol Aging* 1988; 3: 280-285.
- [8] Adlard PA, Cotman CW. Voluntary exercise protects against stress-induced decreases in brain-derived neurotrophic factor protein expression. *Neuroscience* 2004; 124: 985-992.
- [9] Sibley BA, Beilock SL. Exercise and working memory: an individual differences investigation. *J Sport Exerc Psychol* 2007; 29: 783-791.
- [10] Huang T, Larsen KT, Ried-Larsen M, Møller NC, Andersen LB. The effects of physical activity and exercise on brain-derived neurotrophic factor in healthy humans: A review. *Scand J Med Sci Sports* 2014; 24: 1-10.
- [11] Zoladz JA, Pilc A, Majerczak J, Grandys M, Zapart-Bukowska J, Duda K. Endurance training increases plasma brain-derived neurotrophic factor concentration in young healthy men. *J Physiol Pharmacol* 2008; 59: 119-132.
- [12] Williams JS, Ferris LT. Effects of endurance exercise training on brain-derived neurotrophic factor. *JEP Online* 2012; 15: 11-17.
- [13] Gomes da Silva S, Arida RM. Physical activity and brain development. *Expert Rev Neurother* 2015; 15: 1041-1051.
- [14] Labban JD, Etnier JL. Effects of acute exercise on long-term memory. *Res Q Exerc Sport* 2011; 82: 712-721.
- [15] Coles K, Tomporowski PD. Effects of acute exercise on executive processing, short-term and long-term memory. *J Sports Sci* 2008; 26: 333-344.
- [16] Bandelow S, Maughan R, Shirreffs S, Kurdak S, Binnet M, Dvorak J, et al. The effects of exercise, heat, cooling and rehydration strategies on cognitive function in football players. *Scand J Med Sci Sports* 2010; 20: 148-160.
- [17] Pontifex MB, Hillman CH, Fernhall B, Thompson KM, Valentini TA. The effect of acute aerobic and resistance exercise on working memory. *Med Sci Sports Exerc* 2009; 41: 927-934.
- [18] McMorris T, Sproule J, Turner A, Hale BJ. Acute, intermediate intensity exercise, and speed and accuracy in working memory tasks: a meta-analytical comparison of effects. *Physiol Behav* 2011; 102: 421-428.
- [19] Moore RD, Romine MW, Oconnor PJ, Tomporowski PD. The influence of exercise-induced fatigue on cognitive function. *J Sports Sci* 2012; 30: 841-850.
- [20] López MD, Zamarrón MD, Fernández-Ballesteros R. Relationship between exercising and physical and cognitive function indicators. Comparison of results with age. *Rev Esp Geriatr Gerontol* 2011; 46: 15-20.

تمام افراد یکسان نبود ولی در مطالعه حاضر تاثیر ورزش بر گروه‌های مورد مطالعه یکسان بود [9]. که احتمالاً به علت تفاوت سنی گروه‌های مورد مطالعه در مطالعات مذکور است. یکی از نتایج مطالعه حاضر عدم ارتباط شیوه مختلف ورزشی (از نظر هوازی و بی‌هوازی) در بهبودی عمل‌کرد حافظه است که در مطالعات متعدد صورت گرفته نیز نشان داده شد که ورزش می‌تواند موجب بهبود عمل‌کرد حافظه شود و با انجام این مطالعه می‌توان گفت که این بهبودی در عمل‌کرد حافظه می‌تواند مستقل از نوع شیوه تمرینی باشد. و احتمالاً افراد به هر شیوه‌ای فعالیت ورزشی داشته باشند منجر به بهبودی عمل‌کرد حافظه خواهد شد.

یکی از مهم‌ترین محدودیت‌های مطالعه تعداد نمونه کم گروه‌ها برای مقایسه تمرینات هوازی و بی‌هوازی بوده است. محدودیت دوم استفاده از تست حافظه وکسلر می‌باشد. اگرچه این تست یک تست استاندارد می‌باشد و از نظر قابلیت اجرایی در نمونه‌های انسانی آسان است ولی مطالعات پیش‌تر با استفاده از شیوه‌های دیگر اندازه‌گیری حافظه پیشنهاد می‌شود. محدودیت سوم عدم اندازه‌گیری BDNF بوده که نمونه‌های حاضر همکاری لازم را نداشتند.

به‌طور کلی یافته‌های پژوهشی حاکی از آن است که تمرینات ورزش هوازی و بی‌هوازی باعث بهبود عمل‌کرد حافظه شده است لذا انجام ورزش هوازی و بی‌هوازی برای بهبود عمل‌کرد حافظه توصیه می‌شود.

تشکر و قدردانی

این پژوهش با استفاده از اعتبارات معاونت پژوهشی دانشگاه آزاد واحد سمنان انجام گرفته است لذا پژوهشگران از اعضای محترم شورای تحقیقات و کلیه کسانی که به نحوی در این طرح سهیم بودند صمیمانه تشکر و قدردانی می‌نماید.

منابع

physical activity compared to pure cognitive training in healthy older adults. *Clin Interv Aging* 2015; 10: 297-310.

[25] Lo Bue-Estes C, Willer B, Burton H, Leddy JJ, Wilding GE, Horvath PJ. Short-term exercise to exhaustion and its effects on cognitive function in young women. *Percept Mot Skills* 2008; 107: 933-945.

[26] Etnier J, Labban JD, Piepmeier A, Davis ME, Henning DA. Effects of an acute bout of exercise on memory in 6th grade children. *Pediatr Exerc Sci* 2014; 26: 250-258.

[27] Prigatano GP. Wechsler Memory Scale: a selective review of the literature. *J Clin Psychol* 1987; 34: 816-832.

[21] Pietrelli A, Lopez-Costa J, Goñi R, Brusco A, Basso N. Aerobic exercise prevents age-dependent cognitive decline and reduces anxiety-related behaviors in middle-aged and old rats. *Neuroscience* 2012; 202: 252-266.

[22] Meeusen R. Exercise, nutrition and the brain. *Sports Med* 2014; 44: S47-56.

[23] Hu JP, Guo YH, Wang F, Zhao XP, Zhang QH, Song QH. Exercise improves cognitive function in aging patients. *Int J Clin Exp Med* 2014; 7: 3144-3149.

[24] Rahe J, Petrelli A, Kaesberg S, Fink GR, Kessler J, Kalbe E. Effects of cognitive training with additional

What is the most effective method of pain reduction during intravenous cannulation in children? A systematic review and meta-analysis study

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Introduction: Pain is one of the various outcomes of intravenous cannulation. There are various methods of pain reduction during intravenous cannulation. Still there is not any agreement about the most effective analgesic method. For this reason, the aim of this study was to determine the most effective method of pain reduction during intravenous cannulation in children.

Materials and methods: All previous relevant studies in the databases were reviewed using Cochrane protocol and sensitive and standard keywords such as pain, children and intravenous cannulation, from 1995 to 2013. The extraction and evaluation of studies were performed by two individuals. CONSORT checklist was used to evaluate the quality of the studies. Samples homogeneity was assessed using the tau-square estimates. The random effects model was used to report the pooled average estimates for the most effective method on pain reduction during intravenous cannulation.

Results: systematic review of 14409 studies determined that only 30 studies had the inclusion criteria. Nineteen studies were entered the meta-analysis. Meta-analysis study showed that EMLA was the most effective method in comparing control/ placebo among the other various ones. Among the treatments comparison, IontophoresisLidocaine was the most effective in compare with EMLA.

Conclusion: EMLA cream was the most effective treatment in reducing the pain of intravenous cannulation. Although lidocaine injection methods such as Iontophoresis, as a new method, can produce more rapid, effective and satisfying pain reduction than other alternatives.

Keywords: Child, Pain, Pain Management, Intravenous Injections, Systematic Review, Meta-analysis

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Factors affecting the safety of hemodialysis' patients in dialysis ward and their strengthening strategies

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Introduction: Safety of patients during hemodialysis is providing the foundation of high quality health care. The aim of this study was to determine those factors affecting the safety of hemodialysis patients and strengthening strategies.

Materials and Methods: This study was conducted by using qualitative approach and conventional content analysis methods. The data was included the semi-structured interviews took place at the hemodialysis unit of Semnan Kowsar hospital. Purposeful sampling was started and continued on the basis of codes and classes till it reached the saturation point. Interviews were conducted with 20 participants (Consisted of eight patients, seven nurses, and two doctors and three attendants). Data Analysis was done, using conventional content analysis along with Granheim and Lundman (2004) five-step data collection method. Accuracy and strength of the research was assured by using Lincoln and Guba measurement method.

Results: The data analysis showed that the four main categories of "constant nursing care", "patient participation", "organizational strategies" and "intellectual management" were effective on the safety of hemodialysis' patients.

Conclusion: This study showed that nurses, patients, organization and management are the most important factors in safety of hemodialysis patients. In order to strengthen the safety of patients undergoing hemodialysis, the development of criteria, check list and indicators of organizational standards are needed in order to reduce accidents and improve the process of the hemodialysis treatment for the patients.

Keywords: Patient Safety, Hemodialysis, Nursing, Qualitative Research

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Effects of low power laser in maxillofacial disorders recovery

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Introduction: Maxillofacial disorders can lead to functional limitation and pain in head and face. Despite the high prevalence of this disorder, quite a few studies have performed in relation to that . The aim of this study was to investigate the effects of He-Ne low power laser (with a wavelength of 632.8nm) in treatment of maxillofacial disorders.

Materials and Methods: This study was a randomized clinical trial participating 142 patients with maxillofacial abnormalities, randomly divided to 2 groups of 71 experimental and control participants. Background information about the degree of pain was obtained through a questionnaire and VAS (visual analog scale). Experimental and control groups were irradiated with He-Ne low level laser (632.8 nm wavelength, with the average intensity of 2.5 and zero joules per square centimeter) for 12 sessions (3 times a week, each time for 15min). The data related to before and after treatments and the change in percentages were analyzed.

Results: before and after treatment, analysis showed significant relief in maxillofacial pain and movement limitations (P=0.013) in the experimental group. Comparisons between groups showed significant improvement in recovery of maxillofacial disorders of experimental against control (P=0.003). Comparing the difference in change percentage in the experimental and control groups was significant (P=0.001).

Conclusion: He-Ne low power laser (within the wavelength of 632.8nm) can be considerably helpful to relief maxillofacial disorder's disability and discomfort.

Keywords: Low Power Laser, Maxillofacial, Disorder, Pain

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Effect of perceptual motor interventions on dexterity of mentally retarded children

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Introduction: Given the importance of the development of gross and fine motor activities and coordination between in performing activities of daily life, improving the hand function in mentally disabled children is one of the priorities of occupational therapists. Perceptual motor deficit in children with intellectual disability result in hand dysfunction such as dexterity. Considering the importance of dexterity and the consequences of problems on the activities of daily living, as well as its reliance on a person's ability to perform fine motor, coordination, speed, gross motor and perceptual abilities, in this study were considered the effect of perceptual motor intervention on dexterity of children with mental retardation.

Materials and Methods: Using simple non-probability method for sampling, based the pattern of monitoring and sample size, we selected 10 children for treatment and 10 children for control groups. The treatment group was trained for perceptual motor intervention for 10 weeks, 3 sessions of 60 min per week. Both groups were trained by an occupational therapist. After 10 weeks, all subjects were re-evaluated. Purdopeg board test used to assess dexterity. Statistical analysis was performed, using SPSS software.

Results: One way analysis of variance showed that the scores of Purdopeg board test between the two groups was not significant ($P \geq 0/05$), though there was a significant correlation between full scores of Bruininks – Oseretsky Test and Purdopeg board test except assembly test ($P \leq 0/05$).

Conclusion: Results of present study showed that although the speed test in the left hand was affected by perceptual motor intervention more than any other tests of dexterity, the intervention did not significantly affect the dexterity of mentally retarded children.

Keywords: Perceptual Motor Intervention, Dexterity, Fine Motor, Gross Motor, Mentally Retarded Children

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Effects of load and unstable support surface on postural control in patients with chronic low back pain

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Introduction: Several studies have demonstrated the postural control alterations in patients with low back pain. However, the difference in center of pressure (COP) parameters in the body sway in unstable conditions is relatively unknown in these patients. Therefore, the aim of the present study was to investigate the effects of unstable load and support surface on postural control in chronic low back pain (CLBP) patients.

Materials and methods: CLBP patients (n=20) (mean age 31.30 years and mean BMI 25.20 kg/m²) and 20 healthy subjects (mean age 30.00 years and mean BMI 24.12 kg/m²) were asked to hold a load weighing 10 percent of their body weight while standing. Experimental conditions were manipulated based on stability of load (stable or unstable) and support surface (firm or foam). Using a force plate, COP sway parameters including sway amplitude (and its standard deviation) and sway velocity (and its standard deviation) in anteroposterior (AP) and mediolateral (ML) directions were measured.

Results: Patients with CLBP exhibited less AP sway amplitude compared to control subjects (P=0.03). Furthermore, they had less ML sway velocity while holding the unstable load (P=0.05) and more ML sway amplitude while standing on foam (P=0.04).

Conclusion: In compare to healthy subjects, patients with CLBP demonstrated a different pattern of postural control during instability of load and support surface. In these conditions, altered proprioception and stiffening strategy can increase the risk of spine injuries.

Keywords: Low Back Pain, Postural Control, Unstable Load, Support Surface

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A comparative study on the effects of mirror therapy and bilateral arm training on hand function of chronic hemiparetic patients

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Introduction: Upper limb chronic hemiparesis is one of the most important factors creating functional disability in stroke patients and therefore several alternative treatments have been proposed with the aim of early restoring upper limb function. Mirror therapy is one of these treatments and the effect of this method has not been evaluated yet in compare with the other methods. Therefore, in this study we compared this method with the effect of bilateral arm training in chronic hemiparetic patients on hand function.

Materials and methods: In this randomized double blind clinical trial, 24 stroke patients were selected by systematic sampling and were placed in two groups of bilateral arm training (12 patients) and mirror therapy (12 patients). Treatment programs consisted of 15 sessions (5 days per week), including 30-minute bimanual training program with mirror for the mirror therapy group and 30 minutes bimanual exercises without mirror for the bilateral arm training group. Patients were assessed by Fuglmyer test for hand function, Box & Block test of dexterity for fine movements of upper extremity and Jamar Dynamometer for the power of the upper extremity before and after treatment and after one month follow up period after treatment.

Results: Data showed that the mean scores obtained from the mirror therapy group immediately after therapy and after the follow up period for hand function and fine movements and power variables were significantly higher than those obtained from the bilateral arm training group ($P > 0.05$).

Conclusion: The findings of this study suggest that mirror therapy may be more effective method for improving hand functions in stroke patients during the chronic phase of recovery.

Keywords: Mirror Therapy, Stroke, Hand Skills

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Factors that affecting survival of patients with acute myeloid leukemia

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Introduction: Acute myeloid leukemia (AML) is a heterogeneous clonal disorder of blood producing cells and it's one of the most common malignant disorders in adults. The aim of this study was to evaluate the blood parameters and the results of the liver function tests, as an effective prognosis for survival in AML patients hospitalized in Taleghani hospital, Tehran.

Materials and Methods: In this cross-sectional study, patients (n=170) with AML diagnosis participated to study the laboratory results influencing their survival. Patients' personal files were used as our source of data. Kaplan-Meier method and log-Rank tests were used for data analysis. Data modeling was performed using Cox regression model.

Results: The mean and median survival time of patients were 14.13 ± 0.93 and 12.23 months respectively. Fitted model showed that factors such as age at the time of diagnosis, WBC count, smoking, family history, LDH and AST levels were associated with chance of survival in patients with AML.

Conclusion: Our results showed that the age at the time of diagnosis, WBC count, smoking, family history, LDH and AST levels are effective factors on the chance of survival in AML patients. Therefore, considering these factors can increase the chance of survival in AML patients.

Keywords: Acute Myeloid Leukemia, Survival Analysis, Liver function tests, blood parameters

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Correlation between *JAK2V617F* mutation and inflammatory bowel disease in patients referring to Taleghani hospital, Tehran

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Introduction: Inflammatory bowel disease (IBD), including ulcerative colitis (UC) and Crohn's disease (CD), is a chronic inflammatory disorder of the gastrointestinal tract. Genome-wide association study (GWAS) has shown that some of the genes of interleukin-23/T-helper 17 (IL-23/Th17) pathway such as Janus kinase -2 (JAK2) predispose the risk of IBD. 46/1 haplotype is common risk factors for both IBD and myeloproliferative neoplasms disease. In view of this shared genetic predisposition, we aimed to determine the frequency of the *JAK2V617F* mutation in Iranians with IBD for the first time.

Materials and methods: In this case-control study, 100 IBD patients including 18 with CD and 82 UC were compared with 100 healthy controls during 2011-2014. The genotypes were identified by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) protocols and distribution of the *JAK2 V617F* mutations were compared in cases and control. To verify the method, patients with myeloproliferative neoplasms with *JAK2V617F* mutations were served as controls.

Results: This study showed that *JAK2V617F* mutation was detected in neither patients nor controls. However, mutation was proved in all patients with myeloproliferative neoplasms that were used as positive control and their heterogeneities were determined.

Conclusion: This study showed that other genetic mechanisms may play an important role in the pathogenesis of IBD. For further evaluation of this mutation, other studies with a larger number of patients and complications such as thromboembolic diseases, is recommended.

Keywords: Inflammatory Bowel Disease, Mutation, Janus Kinase 2

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The effect of mood and cognition on relationship between sleep disturbances and fatigue in people with multiple sclerosis

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Introduction: Fatigue is one of the most common symptoms in people with multiple sclerosis (MS) which reduces quality of life in these people. Sleep disorders are also common in people with MS. In order to facilitate management of fatigue and sleep disorder in this group of patients, it is important to determine those factors that are affecting them. Since mood disorders (depression and anxiety) and cognitive impairment is common in patients with MS, it seems sensible to examine the possible impacts of these factors on the relationship between sleep disorder and fatigue. Therefore, the aim of this study was to investigate the effect of mood disorder and cognitive impairment on the relationship between sleep disorder and fatigue in MS patients.

Materials and methods: There were sixty people with MS participated in this study with an average age of 35 years who were mostly women (87%). They completed Pittsburg Sleep Quality Index (PSQI), Modified Fatigue Impact Scale (MFIS), Mini-mental State Examination (MMSE), The Hospital Anxiety and Depression Scale (HADS) questionnaires

Results: Depression and cognitive status were the most effective factors related to fatigue and were producing 48.8% of the variation in fatigue. Other variables such as anxiety and sleep disorders had less effect. There was a positive relationship between sleep disorders and fatigue. Mood and anxiety scores were significantly and positively correlated with sleep disorders ($P<0.01$).

Conclusion: Anxiety, depression and sleep disorder are the most important factors that influence fatigue. It is necessary for therapist to consider treatments for depression and anxiety in order to manage sleep disorders in people with MS.

Keywords: Multiple Sclerosis, Fatigue, Sleep Disorder, Mood Disorder, Cognitive Disorder

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Correlation between phonological working memory, phonological awareness and language proficiency in Tehran preschoolers

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Introduction: In regard to previous various studies, the role and importance of phonology is clear in ability to read. However, studies have shown different outcomes in understanding the relationship between memory, language and phonological awareness. Considering the different characteristics of Persian script and the lack of phonology and related cognitive processing in Farsi, the present study seemed to be necessary. Also because of the relationship between phonological memory and reading, in this study we expected to find the power of language proficiency and memory in predicting children's reading skill. The present study assessed the statistical correlation between the memory, language and phonology in Persian language preschoolers.

Materials and Methods: This cross-sectional study included 40 normal preschoolers from Tehran. Phonological working memory tests (Digits Recall and Non-word Repetition: NWR), phonological awareness and language development tests were used.

Results: There was a strong positive correlation between phonological working memory (Digits Recall and NWR) and the phonological awareness total score. Also there was a correlation between phonological awareness and language development scores. In spite of positive correlation between language development and Digits Recall, there wasn't any relationship between language proficiency and NWR.

Conclusion: Results showed positive statistical correlation between phonological awareness, phonological working memory and language proficiency in normal Persian speaking children. And also language skills and memory can work as predictors for reading skills in children.

Keywords: Phonological Working Memory, Phonological Awareness, Language Proficiency, Preschoolers

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Interactive effect of regular aerobic training and milk consumption on some inflammatory markers and lipid profile in overweight boys

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Introduction: Several studies have reported the protective effects of aerobic training and milk consumption in obese people, but the exact mechanisms of its effect on the inflammatory markers is not well known. The aim of this study was to determine the interactive effect of eight weeks regular aerobic training and milk consumption on levels of endothelin-1, nitric oxide, interleukin-6, Galectin, and lipid profile in immature overweight boys.

Materials and Methods: In a quasi-experimental study 28 boys (8 to 12 years old) with BMI \geq 25 were selected and divided into 4 groups including exercise, milk, exercise-milk and control randomly. Exercise training was done with 45 to 60% of maximum heart rate during 8 weeks (3 sessions per weeks). Supplement consumer groups received 236 ml low fat milk per day. Before and after 8 weeks, blood sample were collected during the 14 hour fasting condition to measure the inflammatory markers and lipid profiles.

Results: After eight weeks of supplementation and exercise, the mean concentrations of endothelin, galectin and IL-6 decreased, and nitric oxide increased. Most of the changes occurred in exercise-supplement group. VLDL, LDL and TG concentrations were decreased, though in contrast, HDL level was increased (P<0.05).

Conclusion: According to our findings, regular aerobic training and milk consumption individually could be effective in reducing the levels of desired inflammatory factors and plasma lipids. If training was combined with milk consumption, the effectiveness would be increased.

Keywords: Inflammatory Markers, lipid Profile, Overweight, Aerobic Training, Milk

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Germline mutations of RET proto-oncogene exon 2 in iranian population with medullary thyroid carcinoma

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Introduction: Medullary thyroid carcinoma (MTC) accounts for 5-10% of all thyroid cancers and it is inherited in autosomal dominant pattern. Association of RET proto-oncogene mutations in exons 10-16 with MTC is well recognized. Since less attention has been paid to the study of other exons within the same gene, therefore, the aim of this study was to determine the frequency of germ line mutations in exon 2 of the RET proto-oncogene in patients with MTC in Iranian population.

Materials and Methods: There were 223 subjects (125 patients and 98 family members) were participated in this study. Genomic DNA was extracted using standard salting out/proteinase K method. The exon2 and exon-intron boundaries were amplified by using Polymerase Chain Reaction (PCR) and the direct DNA sequencing method was used for genotype analysis.

Results: The nucleotide changes c135G>A/A45A (rs1800858) in exon 2 and c.337+9G>A (rs2435351) and c.337+137G>T (rs2505530) were found in intronic region of RET gene. Among patients and relatives, the most and least genotype and allele frequencies were c.337+137G>T (rs2505530) and c135G>A/A45A (rs1800858), respectively. Also we did not find any significant correlation between detected nucleotide changes and disease phenotype, gender and ethnicity.

Conclusion: No mutation was detected leading to change in amino acid sequences in exon 2 or in exon-intron splice sites. However, further studies are recommended to identify the probable correlation between detected variations and presence or absence of other mutations in other RET main exons, and also to find haplotype association with the disease.

Keywords: Thyroid Neoplasms, Medullary Thyroid Carcinoma, RET Proto oncogene, Germ-Line Mutation, Exon2

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Executive functions of patients under methadone and buprenorphine maintenance treatment

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Introduction: Despite acknowledged evidence of clinical and research on the executive functional impairment of methadone and buprenorphine, still no evidence of comparative study with other drugs and therapeutic approaches is found. This study aimed to evaluate the executive function in opiate users, and those who are under methadone, buprenorphine and abstinence therapy.

Materials and Methods: The study is a cross-sectional survey. Five groups of 31 patients treated with methadone, buprenorphine, abstinence, and opioid abusers and the control group of addicted patients referring to the treatment centers in Semnan and ordinary people were randomly selected. Data were collected by performing computer version of Stroop and Working Memory Tests on subjects. Multivariate analysis of variance was used to analyze the data.

Results: The results indicate greater impairment of working memory and response inhibition in opiate abusers, methadone addicts, buprenorphine and abstinence compared to the control group. Deeper investigation showed that patients treated with buprenorphine had better results compared to other treatment groups in working memory and Stroop test, although this superiority was not statistically significant in some cases.

Conclusion: Although both methadone and buprenorphine leads to a reduction in executive function, but better performances of buprenorphine was marked even in compare to abstinence treatment. It seems that more emphasis should be done on the use of buprenorphine.

Keywords: Methadone, Buprenorphine, Treatment, Addictive Behavior, Opiate Substitution Treatment

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The association between methylenetetrahydrofolate reductase C677T polymorphism and cervical cancer

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Introduction: Cervical cancer is one of the common cancers in women. Several factors can lead to cervical cancer; among which, infection with human papilloma virus (HPV), abnormal epigenetic changes such as methylation of gene promoter, methylene tetrahydrofolatereductase (MTHFR) polymorphisms such as MTHFR C677T polymorphism are notable. MTHFR is an enzyme that plays a role in regulating the metabolism of folate and methionine. This study was aimed to illustrate the relationship between MTHFR gene C677T polymorphism and the risk of cervical cancer.

Materials and Methods: This study examined 100 cervical cancerous tissues in compare to 100 cytology samples of normal healthy women without HPV infection. The age status of both groups was between (20-45) years old. PCR-RFLP was used for MTHFR polymorphism detection.

Results: The results showed a significant correlation between the CT and TT genotypes and reduced risk of cervical cancer. Hardy-Weinberg equilibrium calculation showed that there was not any significant differences between observed and predicted genotypes; hence, the population of patients and the healthy participants for both loci were in balance.

Conclusion: There was an increased risk of cervical cancer in individuals with genotype CC. It is more likely that allele C to be a high-risk allele, increasing the risk of cancer. Allele T, probably acts as a protective allele, which reduces the risk of the disease (OR: 0.5, % 95 CI: 0.28 - 0.89, P = 0.028).

Keywords: Cervical Cancer, Polymorphism MTHFR C677T

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A study of factorial structure of the persian version of the multidimensional peer-victimization scale in primary schools students in Semnan city

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Introduction: The victimization of children in schools is one of the most controversial issues in the area of education around the world. Therefore, the purpose of this study was to examine the psychometric properties of multidimensional peer-victimization scale in students.

Materials and Methods: In this study, 607 students in Semnan were selected by using a stratified sampling method and responded to multidimensional peer-victimization scale, Illinois bullying scale and Harter's motivation questionnaire (concurrent validity). For data analysis, we used factor analysis method, Cronbach's alpha coefficients and Pearson correlations.

Results: The nucleotide changes c135G>A/A45A (rs1800858) in exon 2 and c.337+9G>A (rs2435351) and c.337+137G>T (rs2505530) were found in intronic region of RET gene. Among patients and relatives, the most and least genotype and allele frequencies were c.337+137G>T (rs2505530) and c135G>A/A45A (rs1800858), respectively. Also we did not find any significant correlation between detected nucleotide changes and disease phenotype, gender and ethnicity.

Conclusion: Results indicated that multidimensional peer-victimization scale in the Persian version questionnaire has acceptable psychometric properties for school students, and it can be used as a valid instrument in psychological research.

Keywords: Multidimensional Peer-Victimization Scale, Factor Analysis, Validation, Students

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Effects of different intensities levels of treadmill exercise on cognitive functions and BDNF levels in prefrontal cortex of morphine dependent rats

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Introduction: Chronic morphine leads to cognitive function impairment in human and experimental animals. While physical activity helps to improve the cognitive impairment in morphine dependent male rats, these effects were not examined in females. In this study, we investigated the effects of different intensities levels of forced exercise (light, moderate, and severe) on learning and memory and prefrontal cortex (PFC) BDNF in the morphine-dependent rats.

Materials and methods: Adult virgin female rats were injected with bi-daily doses (10 mg/kg, at 12 h intervals) of morphine over a period of 10 days. Following injections, rats were trained under three different loads (mild, moderate, and severe), each for 30 minutes per session, five days per week and for four weeks. After exercise training, object recognition memory and alternation behaviour in a T-maze were examined, followed by BDNF measurements in PFC.

Results: Chronic morphine intake impaired the recognition memory in morphine dependent rats and this deficit was corrected by moderate and severe treadmill exercise. Chronic morphine did not impair the alternation behaviour, but moderate exercise improved this behaviour in both morphine dependent and control rats. Chronic morphine reduced BDNF levels in PFC which did not reversed by mild exercise. Moreover, both moderate and severe exercises reduced BDNF levels in PFC in both morphine and control animals.

Conclusion: Our findings indicate that the effects of exercise on cognitive functions and BDNF levels in PFC depend on the type of cognitive behavior and intensity of exercise. On the other hand, the correlation between changes in brain BDNF and cognitive functions, especially in the morphine-treated animals seemed to be complex and warrant further investigation.

Keywords: Chronic Morphine, Prefrontal Cortex, BDNF, Cognitive Functions, Exercise

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Healing potential of fibroblast cells cultured on a PLA/CS nanofibrous scaffold in skin regeneration in Wistar rat

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Introduction: Chronic wound treatment has become a major health issue in developed countries, because of their increasing elderly populations. Although chronic wounds are common problem in all population, treatment for these disabling conditions remains limited and largely ineffective. In this study, we examined the benefits of transplantation of fibroblast cells, cultured on PLA/CS (Poly lactic acid/ Chitosan) scaffold, in wound healing.

Materials and Methods: In this study, fibroblast cells were cultured on nanofibrous PLA/CS scaffold then transplanted in rat. The PLA/CS scaffold was prepared by electrospinning method. Also histological staining methods were used to evaluate cell density and amount of collagen.

Results: The macroscopic observations and histological staining showed that the wound healed much quicker in PLA/CS scaffold in compare to control group. In vivo assessment showed that treatment with fibroblast cell loaded scaffolds significantly promoted cell density and amount of collagen in rat compared to control group.

Conclusion: These results indicated that the capacity of nanofibrous PLA/CS scaffold cultured with fibroblast cells in vivo wound healing.

Keywords: PLA/CS Scaffold, Regeneration, Fibroblast, Tissue Engineering

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Effects of speed and time of centrifugation and time of freezing on the amount of produced microparticles from concentrates platelet

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Introduction: The main method of separating platelet microparticles (PMP) is based on the centrifugation speed and time. Due to the high cost of determining the number of PMP via micro-particles (micro bead) and also the necessity of using an expensive device such as a flow cytometer, it seems that Bradford method would be rather an inexpensive, fast and efficient way to determine the concentration of PMP. Therefore, in this study the effect of different factors, such as speed and time of centrifugation and time of freezing on the concentration of PMP in the platelet concentrates bags was studied.

Materials and Methods: We studied two different speeds of centrifugation for separating PRP. In the first protocol for preparation of PRP, the platelet bags were centrifuged at 1500g for 15min and in the second protocol; they were centrifuged at 5000g for the same duration. To evaluate the effect of time, microparticles were separated in 16000g for 20 and 2 min. To determine the concentration of PMP, Bradford method was used. To evaluation the effect of freezing, the PRP was prepared at 300g for 20 min, and then it was frozen in -80°C for five days. Flow cytometry analysis was performed for microparticles identification.

Results: PMP concentrates with the 1500g centrifugation speed showed higher concentration ($P < 0.05$). There was not any significant difference in concentrations of PMPs in relation to the time of centrifugation (2 and 20 min) ($P < 0.05$). Freezing the platelet bags led to higher PMP concentration in compare to the first day of experiment. Flow cytometry analysis showed that microparticles had platelet marker CD41, which represented their origin.

Conclusion: The result of this study showed that the reduction of centrifugation speed could produce higher levels of the microparticles. In addition, the time of separation in the final stage had no significant effect on PMP isolation. Freezing could lead to higher PMP concentration.

Keywords: Blood Platelets, Centrifugation, Freezing, Cell-Derived Microparticles

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Effects of hydroalcoholic extract of Turmeric (*Curcuma longa*) Rhizome on the peripheral and visceral pain in mice

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Introduction: Previously it has been shown that *Curcuma longa* (CL) has anti-inflammatory, antioxidant, antiviral, antifungal, antitumor, and antiniceptive activity in neuropathic injury, when it is administered systemically, although the mechanisms that mediate these effects are not clear. The aim of present study was to determine the peripheral and visceral antinociceptive effects of hydroalcoholic extract of CL on peripheral and visceral neuropathic pain in mice.

Materials and methods: This study was conducted using 160 young adult male albino mice (25-30 g.) in 20 groups (n=8). CL (100, 200, and 500 mg/Kg IP), vehicle (VEH), and (Saline) were injected interaperitoneally 30 min before the pain evaluation tests. Acute and chronic pains were assessed by host plate, tail flick and formaline tests models and visceral pain was assessed by writhing test.

Results: Results indicated that CL has analgesic effects on neuropathic pain ($p<0.05$) than the control group and the higher dose of CL was more effective ($p<0.001$).

Conclusion: The above findings showed that CL has modulatory effects on peripheral and visceral pains.

Keywords: *Curcuma longa*, Curcumin, peripheral Pain, visceral pain, Mice

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Nuclear magnetic resonance -based metabolomics analysis of patients exposed to sulfur mustard in different stages using random forest method

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Introduction: Metabolomics is a powerful technique for determination of biomarkers. Here, we aimed to determine discriminatory metabolomic profiles in different stages of sulfur mustard-exposed patients (SMEPs).

Materials and methods: Nuclear magnetic resonance spectroscopy was used to analyze serum samples from 17 SMEPs (normal group patients) and 17 SMEPs (severe group patients). Multivariate statistical analysis using random forest (RF) was performed on a 'training set' (70% of the total sample) in order to produce a discriminatory model classifying two groups of patients, and the model tested in the remaining subjects.

Results: A classification model was derived using data from the training set with an area under the receiver operating curve (AUC) of 0.87. In the test set (the remaining 30% of subjects), the AUC was 0.8, thus RF model had good predictive power. We observed significant changes in lipid, amino acids and energy metabolism between two groups of patients.

Conclusion: Nuclear magnetic resonance spectroscopy of serum successfully differentiates two groups of patients exposed to sulfur mustard. This technique has the potential to provide novel diagnostics and identify novel pathophysiological mechanisms, biomarkers and therapeutic targets.

Keywords: Mustard Gas, Serum, Metabolomics

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Effects of maternal hypothyroidism during pregnancy on anxiety-like behaviors in adulthood rats: Impact of moderate treadmill exercise

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Introduction: Previous study indicated that the lack of thyroid hormones during brain development can be associated with structural and biochemical changes in the brain that can cause psychological disorders. Physical exercise affects brain neurochemistry and may be ameliorate behavioral deficit in hypothyroidism. The aim of this study was to determine the impact of moderate forced exercise on the effects of maternal hypothyroidism on anxiety-like behaviors in adulthood rats.

Materials and Methods: For the induction of hypothyroidism, 6-propyl-2-thiouracil (PTU) was added to the drinking water (50 and 200 mg/L) of mothers, from the 6th prenatal day to the 21th postnatal day. Maternal hypothyroid adult offspring were exercised on treadmill with moderate intensity for 2 weeks. For measuring the anxiety, animal were tested in an elevated plus maze (EPM) and light and dark box (L/D).

Results: Induction of hypothyroidism during the rat fetal and early postnatal period increased anxiety-like behavior in both EPM and L/D box tasks. Treadmill exercise with moderate intensity, during the postnatal period did not affect the levels of anxiety significantly. Also forced exercise alone increased anxiety behavior significantly.

Conclusion: These findings indicated that maternal hypothyroidism increase anxiety-like behaviors and treadmill exercise with moderate intensity did not ameliorate this behavior. Moreover, physical activity in moderate intensity had anxiogenic effects.

Keywords: Maternal hypothyroidism, Forced exercise, Anxiety, Propylthiouracil, Rat

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Role of brain-derived neurotrophic factor receptor on the anxiety levels in rats following the acute administration of morphine

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Introduction: The aim of this study was to examine anxiolytic effects of acute morphine and the role of BDNF receptor on that effect in adult rats.

Materials and Methods: In this experiment, 48 adult male Wistar rats (200–250 g) were randomly assigned to six groups. Rats were given an acute dose of morphine (10 mg/kg, s.c.) and after 2 hours, single dose of ANA12 (BDNF receptor antagonist) was injected (0.25, 0.5 mg/kg, i.p). After 4h, rats were examined in the EPM to assess the level of their anxiety. Control rats similarly received saline.

Results: An increase was observed in the percentage of time spent in the open arm in the saline rats receiving ANA12 injection. However, the number of open or closed arm entries was less and more, respectively, in the morphine rats receiving ANA12 injection.

Conclusion: Our findings showed a modulatory role of BDNF/TrkB receptor in the anxiolytic effects of acute morphine.

Keywords: Acute Morphine, BDNF Receptor Antagonist (ANA12), Anxiety

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Is the emotional intelligence an indicator of academic achievement in students in Medical Sciences?

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Introduction: Emotional intelligence (EI) is one of the most important issues in many aspects, especially in educational area. Its relationship with academic achievement depends on culture and may reflect in various educational topics in different forms. This study investigates the relationship between EI and academic achievement of students of Semnan University of Medical Sciences (Iran).

Materials and Methods: In this cross sectional study, 607 students of Semnan University of Medical Sciences, Iran were participated. The research instrument included two parts, demographics and 90 questions Bar-On EI questionnaire. The Grade-Point Average (GPA) of previous semester was considered as indicator of participant's academic achievement.

Results: A positive significant relationship was observed between EI and academic achievement ($r=0.122$, $P=0.003$). There was a positive significant relationship between academic achievement and all EI components, except empathy, social responsibility, interpersonal relationship ($p<0.05$). In other words there was not significant relationship between any of the interpersonal components and academic achievement, but all components of other aspects of EI had significant association with academic achievement. There was a significant relationship between interapersonal ($r=0.125$, $p=0.002$), adaptability ($r=0.124$, $p=0.002$), stress management ($r=0.110$, $p=0.007$), general mood ($r=0.124$, $p=0.002$) and academic achievement, but the association between interpersonal component and academic achievement was not significant.

Conclusion: Generally, there was a positive significant relationship between EI and academic achievement, therefore, it seems to be necessary for the educational centers, especially universities, to conduct practical programs to upgrade students' emotional and social skills and capacities. With increasing students' capabilities to cope with environmental pressures, a more stable base will be provided for academic achievement and emotional intelligence's long term effects such as increased performance in occupational and social functionalities.

Keywords: Emotional Intelligence, Academic Achievement, Students, Medical Sciences

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Effects of high intensity aerobic and anaerobic training on the normal healthy people memory functions

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Introduction: The evidence indicates that physical activity increases memory and ability to learn in human and animal. That is to say, the brain remarkably responds to exercise. The purpose of this study was to compare the effect of anaerobic and aerobic exercises on memory.

Materials and Methods: In this study, ninety male participant students were randomly divided into 3 groups of 30. The task for the first group was 3 aerobic exercises (treadmill with intensity of %60-%70 HR max) for 60 minutes per week for 8 weeks. The second group was trained for anaerobic exercise (treadmill with intensity of %75-%85 HR max), whereas the third was the control group, who performed no exercises and no intervention/interferences. After trainings, all ninety students were participated in a memory test at the IQ TEST lab. This test was conducted both at the beginning and the end of program to evaluate their memory function in the terms of Wechsler Test/ on the basis of Wechsler Test.

Results: Wechsler fragment tests/subtests before and after aerobic and anaerobic exercises showed the effects of aerobic training (15.50 ± 5.41), anaerobic training (17.00 ± 4.89) and the control group (2.13 ± 1.96) on the change in memory function. The variation of memory scores between each of aerobic and anaerobic trained subjects with control group was significant ($P < 0.001$). However, there was no significant difference in the memory scores between the aerobic and anaerobic trained subjects ($P = 0.381$).

Conclusion: In general, the findings of this research showed that the 8 weeks aerobic and anaerobic exercises had high positive impact on the memory function in the students undergoing the experiments. We conclude that aerobic and anaerobic exercise can serve as a mean to improve the memory function and is recommended for benefiting memory and learning processes.

Keywords: Aerobic Exercise, Anaerobic Exercise, Memory

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