

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY, SAMALKHA, PANIPAT.

No. PIET/Student-Discipline/9

Dtd.: 31.01.2025

Sub.: Policy on Sensitizing & Remedial Measures for Indiscipline Cases of Students (PSRMICS).

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A new Policy on the above subject has been on the anvil for quite some time now & has been adequately deliberated upon & rehashed in different meetings, including B.O.G. meeting dtd. 18.03.2023, as an alternative & enduring reformatory policy with lesser focus on punitive measures. The same is placed below & is applicable to all student indiscipline cases of the campus & the hostels.

PREAMBLE:

Indiscipline issues of students engage the attention, time & energy of the management, administration, faculty & staff, to the dismay of the entire system. Such issues, if not dealt with deterrence, raise their ugly head even more. **Dealing with them requires a rather protracted (long-drawn-out) engagement of the defaulter with a 'process', & a sustained pressure rather than the short-cut of imposing a fine that causes only little transformation of the defaulter (it simply dents the pocket of the parents).**

As attendance defaults are generally dealt with at the fag end of semester with extra / make-up / remedial classes, so the step of "suspension from classes for specified periods" also doesn't seem to serve as adequate deterrence, rather is paradoxical as, on the one hand, the defaulter is expelled from the class &, on the other hand, the whole machinery works to get him/her into the class & make up his/her attendance.

In the ultimate analysis, enrollment (which has an essential element of happiness) into a possibility, rather than registration (which has an element of pressure) into a possibility is important. The possibility being created via this policy is of an indiscipline-free campus. Towards it, a prolonged five-pronged attack on the menace of indiscipline has been thought fit.

THE POLICY IS SUBTLE IN THAT IT COMBINES THE PUNITIVE MEASURES WITH THE PLEASURES OF GETTING OFF THE HOOK FROM A MENACE WITH THE SUPPORT OF TEACHER MENTORS & STUDENT MENTORS. RUNNING IN THE CAMARADERIE OF STUDENT MENTORS CAN BE A PLEASURE IN ITSELF. BESIDES THAT, GETTING BLESSED WITH ENDURANCE, STRENGTH & GRACE, GETTING TO KNOW THAT SO MANY PEOPLE STAND BEHIND THE DEFAULTER, THE TRANSFORMATION THAT THE BOOK (OF WHICH CERTAIN PAGES ARE SPECIFIED TO BE READ & MADE PRECIS OF) CAUSES, THE OPPORTUNITY OF COMMUNITY SERVICE, THE AMBIENCE OF THE FORUM PROVIDED TO DELIVER A TALK — ALL HAVE BEEN DESIGNED TO BE COMBINED TO MAKE LIFE ALIVE & KICKING FOR THE DEFAULTER, FREED FROM THE CLUTCHES OF GUILT.

The '*guiding principle*' for the Dept. / Proctorial Board / 'Hostels Discipline Committee' is reformation via 'enrollment' processes but 'deterrence' may also be called forth in seemingly incorrigible cases less amenable to instruction or taking too much time of enrollment.

The offence / act of indiscipline can be reported by anybody & even the punishment can be recommended by any teacher/ staff/ HoD/ section head, but the quantum & '*combination*' of sensitizing & remedial measures to be finally taken in each case shall be decided by the concerned Dept. for the indiscipline case in the Dept.; by the 'Proctorial Board' for the

indiscipline cases in the Campus; & by the 'Hostels Discipline Committee' for the indiscipline cases in Hostel premises, & approved by the Director.

THE POLICY:

1) RUNNING FOR RESILIENCE OR ALTERNATIVE SPORTS ACTIVITY:

Under this head, the defaulter shall be advised to **choose one** amongst the following:

- 1.1 Target Running of 2 Km for males or 1 Km for females to condition the mind & the body.
- 1.2 Alternative sports activity / yoga / pranayama, etc., for the duration (minimum 21 days) & target level as prescribed by Sports Officer of the Institute.
- 1.3 Making Precis of two different texts, Rendering two Community Services, Serving twice the Probation Period (or till the duration of the Academic Program, whichever is earlier) & paying twice the normal applicable/prescribed fine.

Each of the above options are detailed below:

1.1 TARGET RUNNING: Each defaulter will be 'evolved' as an athlete / player by giving him/her the '**GAME**' of running 100 metres, increased by 100 m or more on successive days (in a graded manner, the intensity of the game will be increased without causing injury, cramps, etc. to the player) till he/she is able to complete, over a reasonable period (say, 20 days), a target '*running*' of 2 Km (1 Km for females) at a stretch at a reasonable pace in a day.

Running is a great stress-buster, leads to detoxification, it makes one acutely present about poor fitness level, enables one to attain freedom from drugs (if addicted to), and improves bodily & mental resilience. Besides running, the defaulter (athlete/player in the making) shall also be sensitized on the benefits of running via counselling by Sports Officer & via the attached article (Annexure-1) on 'Reading the Mind and Jogging the Brain'.

Rather than allowing it (the prescribed running) to be task-oriented, the defaulter shall experience it as a game, as he/she will be duly supported in performing the task (i.e., running) in camaraderie (healthy friendship) with one/two senior student mentor(s) &/or under the supervision of a sports officer/ expert.

The defaulter must report to the Sports Officer within 2 days from the issue date of the Office Order (awarding sensitizing & remedial measures for the indiscipline case of the student), else the defaulter shall be further penalized.

1.2 ALTERNATIVE SPORTS: If, owing to severe health condition, the defaulter is unable to undertake running, or if he/she so chooses, then suitable alternative sports activity / yoga / pranayama, etc., for the duration (minimum 21 days) & target level as prescribed by the Sports Officer of the Institute, shall have to be performed by the defaulter.

To impart sustenance to above reformatory steps, the defaulter may be prescribed (by the Sports Officer) to participate in some tournament(s) also.

1.3 TAKING UP TWICE OF OTHER ACTIVITIES: If the defaulter isn't convinced about the innumerable & immense benefits of prescribed running / alternative sports, then he/she shall (i) Make Precis of two different texts; (ii) Render two Community Services; (iii) Serve twice the Probation Period or till the duration of the Academic Program, whichever is earlier; & (iv) deposit twice of the fine imposed on him /her. The details of these three activities & the fines are enshrined in Sr. Nos. '2', '3', '4' & '5' below.

2) PRECIS AS A MEANS TO INVOKING DORMANT NEURAL NETWORK:

Precis-making has always been considered as a mind-sharpening exercise. Brevity is the soul of wit. In weighing the given material (of which precis is to be made) to identify the chaff

from the content, one has to necessarily invoke one's mental faculties. In so doing, the human neural system strengthens itself.

To this end, the defaulter shall be called upon to read one prescribed book from the following list (not exhaustive, but indicative list) or prescribed pages (not less than approx. 10) & make one-page precis of the same within 2-5 days, however, the precis should not match with that of other / previous defaulters, nor be copied from any sources, else the authority awarding the punishment shall continue to prescribe more sets of approx. 10 different pages or books till the defaulter submits an original precis:

INDICATIVE LIST OF BOOKS:

- (a) Dr. Spencer Johnson, "Who Moved My Cheese", Publisher: Putnam Adult (earlier Vermilion Press).
- (b) Dr. L. Hardayal, "Hints for Self Culture", Pub.: Khosla Publication (earlier Jaico Pub.).
- (c) Zbigniew Pietrasinski, "Art of Learning", Pub.: Pergamon Press.
- (d) David Goggins, "Can't Hurt Me: Master Your Mind and Defy the Odds", Pub.: Lioncrest Publishing.
- (e) James Clear, "Atomic Habits: An Easy & Proven Way to Build Good Habits & Break Bad Ones", Pub.: Avery.
- (f) John Medina, "Brain Rules", Pub.: Pear Press, Seattle, USA.
- (g) Rhonda Byrne, "The Secret", Pub.: Simon & Schuster, U.K.
- (h) Dr. Joseph Murphy, "Power of Subconscious Mind", Krishana Publication.
- (i) Ichiro Kishimi, & Fumitake Koga, "The Courage to be Disliked", Pub.: Simon & Schuster, U.K.
- (j) R.R. Gaur, R. Asthana, G.P. Bagaria, "A Foundation Course in Human Values & Professional Ethics", Pub.: Excel Books Pvt. Ltd.

The precis shall be evaluated (via a brief interview of the defaulter) for whether the defaulter has proper comprehension of the book/ specified pages, for originality, completeness, etc. by a senior teacher of English deputed by the Head, Applied Sci. & Hum. Dept., or by a senior teacher deputed by concerned HoD, & shall be reverted back for needful action, if lacking. In case precis of two different texts are prescribed (as per Sr. no. 1.3), the authority awarding sensitizing & remedial measures may choose different sets of pages or more than one of above books or other substantial books (of similar rigor & nature, i.e., on self-improvement). The report of the evaluator shall be submitted through HoD, ASH or concerned HoD to the authority awarding said measures.

3) COMMUNITY SERVICE:

Community Service has often been hailed as a reformatory step in different offences. It is an unpaid service to be rendered by the offender for prescribed hours, usually under the supervision of a Probation Officer (appointed by Director/ Chief Proctor/ Proctorial Board or Chief Warden/Hostels Discipline Committee, as the case may be). It has to be an appropriate service intended to benefit the community / system in or against which an offender has committed an offence, & the work should typically be connected with antidote of the offence. For example, a person found guilty of vandalism may be ordered to clean public spaces. Thereby, the offender can reflect on the offence committed & gain an understanding of the consequences of his behavior & actions. Other examples: Organize fun activities for children/ aged persons with cancer; Gather used sports equipment & / or used clothes to give to needy families; Hold a donation drive for winter outfits; Launch a social media awareness campaign; Offer cost-free landscaping services; Delivering an extempore or prepared talk / presentation (before a dept./ larger audience) on a topic related to the default; etc.

Punishment facet of Community Service is meant to serve as a deterrent to other potential offenders. With these considerations, the punishment awarding authority/ the Proctorial Board/ Hostels Discipline Committee shall decide the community service tasks, if any to be awarded in each case.

4) **SUBJECTING TO PROBATION:**

Fear of punishment is more important than the punitive action itself, as having lived through the rigours & trauma of punishment, one now knows how to tolerate it or what it takes to go through it, with resultant likelihood of growing obstinate.

Experience shows, it pays off to put defaulters under probation for specific periods. So each defaulter, depending upon the extent / severity of default, shall be put on 'probation' for a specified period or for the rest of his stay in the Institute, & if he/ she defaults again in the probation period, he/she shall be expelled from the Institute or will be awarded punishment higher than that deemed fit to his/her case under this policy.

5) **FINES & OTHER PUNISHMENTS PERTINENT TO SEVERITY OF DEFAULT:**

Depending upon severity of indiscipline, along with other measures (tasks to be undertaken by the defaulters) as deemed fit to the case, the concerned Dept./ Proctorial Board/ Hostels Discipline Committee shall suggest fines & / or punishments to be imposed as per following suggestive list (Table-1), or even more than the minimum in these punishment rules. For the cases not covered in the list, the Director shall be the final authority to impose the punishment /fine on the recommendation of the concerned Dept./ Proctorial Board/ Hostels Discipline Committee.

Table-1: Punishments/ Fines to be imposed against Default/ Offence.

S. no.	Nature of Offence/Indiscipline/ Default	Quantum/Range of Fine/ Punishment (per incidence)
1.	Involvement in any form of Ragging.	Immediate expulsion from Institute & further action as per Hon'ble Supreme Court/UGC/AICTE, etc.& in serious cases, reporting to Police to set the Criminal Proceedings/law into motion. In minor cases, withdrawal of any scholarships, book grant, cut in marks of general proficiency/ fitness for the profession, non-issuance of character certificate, disallowing use of one/ more of College facilities, etc. + Probation + Affidavit from parents.
2.	Fight amongst two or more students.	Rs. 500-2000 / student.
3.	Fight amongst two or more students, leading to injury to any one or more.	Rs. 1000-5000 / student &/or cost of treatment of the aggrieved one(s) to be borne by the aggressor(s)+ rustication/ suspension for certain period + written apology + probation.
4.	Possession of or indulging in use of or fighting with any kind of weapons.	Rs. 2000-10000 / student + rustication/ suspension for certain period +written apology + probation.
5.	Damage to Institute property/infrastructure	Rs. 1000-5000 / student + cost of repair/ replacement.
6.	Indiscipline in College vehicle(s), misuse of transport facility or any other facility (Dept., Library, Hostel, ...)of the Institute.	Rs. 1000-5000 / student + withdrawal of facilities for specific period.
7.	Misbehaviour with Institute officers/ officials.	Rs. 1000-10000 + written apology + probation.
8.	Consumption / Possession of alcohol.	Rs. 1000-3000 + written apology + probation.

9.	Consumption / Possession of drugs/ narcotics, cigarettes, tobacco products, etc.	Rs. 1000-10000 + written apology + probation.
10.	Bringing unauthorized guests to College premises/ its functions.	Rs. 500-2000 + written apology + probation.
11.	Unfair means cases in Sessional/ Internal/ House Tests:	
	(a) Use of technology / electronic media / devices etc. in copying.	(a) Rs. 2000-4000 + cancellation of copied matter or the entire paper.
	(b) Copying from a handwritten or printed slip/text.	(b) Rs. 1000-3000 + cancellation of copied matter or the entire paper.
	(c) Copying from another examinee.	(c) Rs. 1000-3000 + cancellation of copied matter or the entire paper.
	(d) Leaking out the question paper before duly handing over the Answer Book.	(d) Rs. 1000-4000 + cancellation of copied matter or the entire paper.
	(e) Indiscipline in Examination Hall/ Test Venue.	(e) Rs. 1000-5000 + cancellation of one / more papers.
	(f) Misbehaviour with Invigilator/ Exam.-related personnel.	(f) Rs. 2000-10000 + written apology + probation.
12.	Unfair means cases in Final Exams. (under the Univ. or Autonomous Mode).	Univ. / Autonomous Institute rules on Unfair Means Cases (UMCs) / Use of Unfair Means (UUM) cases, as applicable, shall apply. Unfair means cases shall also be sent to Univ. / Institute CoE. For the exams. under the Autonomous College, penalties for different cases shall be applicable as specified under the clause, "Guidelines for UUM Committee regarding penalties for different types of offences under UUM" in Ordinance Number-3: Conduct and Evaluation of Examinations. In addition to above, the measures deemed fit to the case can be taken by the institute/ concerned dept. so as to contain the menace.
13.	Tendering wrong information in documents/ any communication / correspondence or not quickly updating the Institute's relevant office about any changes in information/ data/ forging any documents, etc.	Rs. 500-5000.
14.	Playing cards in Institute Campus, class rooms, hostels.	Rs. 500/-
15.	Playing gambling / satta/ matka offline or via online modes/ platforms.	Rs. 5000-10000.
16.	Committing any cybercrime, posting any threatening / inappropriate/obscene material addressed to or onto the address / email ID/ personal window/ any media of any faculty or staff member or any other student, or to show to public or any individual any objectionable matter, making any threatening/ inappropriate/ obscene calls, doing unauthorized access, data theft, malware attacks or identity theft, etc.	The guilty, besides being punishable under the I.T. Act, shall be liable for following punishments: (a) Minor default: Fine Rs. 500-5000. (b) Fault of moderate nature: Fine Rs. 5000-10000. (c) Fault of high degree: Fine Rs.5000-10000 + rustication for certain period or expulsion + written apology + probation (in case of rustication).

17.	Misuse of pass issued to a guest (outsider not studying in or serving the Institute)	Black-listing of concerned guest for one/ more functions of the Institute.(**)
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(**): Each pass shall be super-scribed with a warning, "Misuse of pass will lead to black-listing of Guest". Gradually, the issue of passes shall be minimized / discontinued. The inviting person &/or his/her authorized person shall usher the guest from the Institute Gate & remain responsible for all actions on behalf of the concerned Guest.

Notes:

1. In cases warranting the attention of parents, the parents of defaulters shall be called to the office of Proctor/ HoD/ Chief Warden/ CoE/ Registrar/ Dean / Director to apprise the parents about the gravity of the case and to seek their intervention in the remedial / correctional course(s) of action. Also, parents' affidavit, guaranteeing good behavior of their ward in future, shall be taken by the office of the concerned Officer. The defaulters may also be put on probation for specific periods deemed fit to their case.
2. In all severe cases, intervention of mentors, relevant officers, resp. HoDs / Deans / Registrar / Chief Proctor / Chief Warden/ CoE/ Sports Officer also to be taken.
3. To serve as deterrence to even others, all Notices about imposition of penalties on defaulters shall not only be placed on the Notice Board of the concerned Dept., but also on the Notice Boards of other Depts., and also copies thereof shall be marked to all concerned quarters such as Head of concerned Dept., Dean Academics, Dean Engg., Dean Students Welfare, Controller of Examinations, Finance Officer, Registrar, Director. In cases warranting intervention of District Administration / Police etc., as per the case, copies shall be marked accordingly.
4. Repetition of the act(s) of indiscipline are to be treated seriously & may attract higher punishment or even termination from the College.
5. In case of expulsion from the Institute, no Character Certificate shall be issued to the defaulter. Even in other cases, non-issuance of Character Certificate may be considered as per the case.
6. Fine will be collected either through direct receipt with Institute cashier/ Accounts Branch or through adding in Sem. Fees. In either case, the defaulter has to submit, through concerned HoD/ Chief Warden/ Chief Proctor, a copy of proof of deposited fine to the authority awarding punishment
7. The Director shall be the Competent Authority vested with the power to add to these rules or delete or amend any of the existing rules from time to time. The Director shall be the final authority to approve / award the punishment/ fine & to make the interpretation of these Rules & Regulations, in case of any dispute or ambiguity.
8. The jurisdiction shall be confined to Panipat only.

Director

Cc: A copy of the above is forwarded to the following for information & necessary action:

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| 1. All Deans/ HODs/ HoOs/ Registrar; | 2. Chief Proctor. | 3. Chief Warden. |
| 4. Controller of Examinations. | 5. Sports Officer. | 6. Librarian. |
| 7. The Management. | | |

Reading the Mind and Jogging the Brain

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A fondness for reading, if properly directed, can be an education in itself. In 2012, neurobiologists at Stanford Univ. asked subjects to read passages from a novel while inside MRI machines, and examined the blood flow in their brains. The findings showed that any sort of reading, even if it is just fiction or leisure reading, is good for the brain, it increases blood flow to the brain. When the subjects were asked to read the book critically (like one would do for an exam.), the blood flow increased beyond executive function regions (the parts of the brain responsible for problem-solving).

Reading, as it turns out, is like a workout for the brain. The brain is like a muscle; the less it is used, the more it atrophies. If we reduce reading, the connectivity in our network of neurons in the brain (neuron is the smallest thinking unit in the brain) reduces. Keeping the brain active, helps in growth of new brain cells, irrespective of age. A study, published in the year 2014 in the journal *Neurology*, suggests that people who read, write, and engage in mentally stimulating activities preserve memories at a rate at least 32% higher than those who do not – and more importantly, are more likely to avoid dementia. In science-speak, exercising the brain with mentally stimulating tasks helps build new neuronetic connections, which makes it harder for the plaques and tangles of Alzheimer's disease to take hold and cause memory loss.

If one is in an appreciating mode while reading, both hemispheres of the brain (one half attending to emotions & feelings and the other half attending to cold logic, number crunching and analytics) get involved in the learning process and thus learning happens with greater profundity as well as creativity and retention are improved. Diversifying one's perspectives too can help boost intelligence and creativity. On the other hand, a belief around fixed limits (for instance believing "I cannot top in the examination") or a fixedness of views (except, of course, 'values' which need to be relatively fixed in order to give sane axioms for societal & personal stability) stifles intelligence and creativity, while a belief, in continuous capacity to grow, stimulates creativity.

Scientists at the University of Liverpool monitored the brain activities of those put to read serious literature, both in their original, tough and challenging form as well as in their easier and modern translation. The results: the more challenging original books "set the brain into more electrical activity than the pedestrian versions". And more electrical activity means greater creativity and retention.

In 2004, evolutionary biologists Daniel E. Lieberman of Harvard Univ. and Dennis M. Bramble of the University of Utah published a seminal article in the journal *Nature* titled "Endurance Running and the Evolution of Homo" in which they posited interesting findings and observations. The data about brain size and endurance capacity in mammals like dogs, guinea pigs, foxes, mice, wolves, rats, civet cats, antelopes, elands, mongoose and goats was compared with that for humans. A notable pattern was that species like dogs and rats that have a high innate endurance capacity also had larger brain volumes relative to their body size, while

humans have a brain that is about three times larger, given our species' body size in comparison with that of other mammals.

Scientists have discovered that exercise builds a brain that resists physical shrinkage and enhances **cognitive flexibility**. The latest neuroscience suggests that exercise does more to bolster thinking than even thinking does.

Why would exercise build brainpower in ways that thinking might not? The brain, like all muscles and organs, is a tissue, and its function declines with underuse and age. Beginning in our late 20s, most of us will lose about 1% annually of the volume of the hippocampus, a key portion of the brain related to memory and certain types of learning.

Just how exercise remakes minds on a molecular level is not yet fully understood, but research suggests that exercise prompts increase in brain-derived neurotrophic factor (BDNF), a substance that strengthens cells and axons, fortifies the connections among neurons and sparks neurogenesis. After workouts, most people display higher BDNF levels in their blood streams.

Whatever the activity, an emerging message from the most recent science is that exercise need not be exhausting or strenuous to be effective for the brain. When a group of 120 older men and women were assigned to walking or stretching programmes for a major 2011 study, the walkers wound up with larger hippocampuses after a year. Meanwhile, the stretchers lost volume to normal atrophy. The walkers also displayed higher levels of BDNF in their bloodstreams than the stretching group and performed better on cognitive tests.

The most concrete evidence comes from experiments on Lab animals by Rhodes at Beckman Institute for Advanced Science & Technology at The University of Illinois that put groups of mice into four distinct living arrangements.

One group lived in a world of sensual & gustatory plenty, dining on nuts, fruits, cheese, etc. Balls, plastic tunnels, nibble-able blocks, mirrors and seesaws filled other parts of the cage. Group-2 had access to all of these pleasures, plus they had small disc shaped running wheels in their cages. The third group's cages held no embellishments, and they received standard, dull kibble. And the fourth group's home contained the running wheels but no other toys or special treats.

All groups of mice completed a series of cognitive tests at the start of the study. Then they ran, played or, if their environment was un-enriched, lolled about in their cages for several months.

At the end of the study, Rhodes's research team found that the toys and tastes, no matter how stimulating, had not improved the animals' brains. Only one thing mattered and that's whether they had a running wheel. Animals that exercised, whether or not they had any other enrichments in their cages, had healthier brains & performed significantly better on cognitive tests than the other mice. Animals that didn't run, no matter how enriched their world was otherwise, did not become more intelligent.

Although scientists thought until recently that humans were born with a certain number of brain cells and would never generate more, yet they now know better. In the 1990s, using a sophisticated technique that marks newborn cells (the subjects were injected with a substance that marks newborn cells in the brain, thus the workings of individual neurons and the make-up of brain matter itself can be examined), researchers determined during autopsies that adult human brains contained quite a few 'new' neurons. Fresh cells were especially prevalent in the hippocampus, indicating that neurogenesis – or the creation of new cells – was primarily occurring there.

Even more heartening, scientists found that exercise jump starts neurogenesis. It was found that mice and rats that ran for a few weeks generally had about twice as many 'new' neurons in their hippocampi as had the sedentary animals. Their brains, like other muscles, were bulking up.

However, it was the ineffable effect that exercise had on the functioning of the 'newly formed' neurons that was most startling. Brain cells can improve intellect only if they join the existing neural network, and many do not, instead rattle aimlessly around in the brain for a while before dying.

One way to pull neurons into the network, however, is to learn something. In a 2007 study, new brain cells in mice became looped into the animals' neural networks if the mice learned to navigate a water maze, a task that is cognitively but not physically taxing. However, these brain cells were very limited in what they could do. When the researchers studied brain activity afterwards, they found that the newly wired cells fired only when the animals navigated the maze again, not when they practiced other cognitive tasks. The learning encoded in those cells thus did not transfer to other types of rodent thinking.

Exercise, on the other hand, seems to make neurons nimble. When researchers in a separate study had mice run, the animals' brains readily wired many new neurons into the neural network. However, very significantly, those neurons didn't fire later only during running, they also lighted up when the animals practiced cognitive skills, like exploring unfamiliar environments. Thus, in the mice, running, unlike learning, had created brain cells that could **multitask** – a result having far reaching implications for those who exercise, run, jog or walk.

In year 2013, in an eye-opening demonstration of nature's ingenuity, researchers at Princeton Univ. not only discovered that exercise creates vibrant new brain cells but also found that it shuts them down when they shouldn't be in action. For quite some time, scientists studying exercise were puzzled by physical activity's two seemingly incompatible effects on the brain. On the one hand, exercise is known to prompt the creation of new and very excitable brain cells. At the same time, exercise also induces an overall pattern of calm in certain parts of the brain.

Most of us probably do not realize that neurons are born with certain predispositions. Some, often the younger ones, are by nature easily excited. They fire with almost any provocation, which is laudable (and desirable) if one wishes to speed one's thinking and memory formation. However, this feature is less desirable during times of everyday stress. If a stressor doesn't involve a life-or-death decision, however it requires considered action, then having lots of excitable neurons firing all at once can be counterproductive, inducing anxiety.

Studies in animals had shown that physical exercise creates excitable neurons in abundance, especially in the hippocampus, a portion of the brain involved in thinking and emotional responses. However, exercise has also been found to reduce anxiety in humans and animals. Exercise has long been thought to be effective cure for anxiety and depression, however, the brain mechanism behind the phenomenon had remained a mystery. The Princeton University researchers wondered how physical activity can simultaneously create ideal neurological conditions for anxiety and nimbleness as well as leave the practitioners (of physical activity) with a deep-rooted calm.

To address this issue with finality, they gathered adult mice, injected them with a substance that marks newborn cells in the brain, and for six weeks, allowed half of them to run at will on little wheels, while the others sat quietly in their cages. Later, the researchers determined each group's baseline nervousness. If access was allowed to cages with open well-lighted areas, the running mice were more willing (although cautiously) to explore and spend time in open areas – an indication of their more confidence and less anxiety – than the sedentary animals. The researchers also checked the brains of some of the runners and the sedentary mice to figure out how many and what varieties of new neurons they contained. The startling revelation was that the runners had in their brains not only greater number of nimble neurons (responsible for speedier thinking) but also nanny neurons designed to shush and quiet activity in the brain.

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